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In the Supreme Court of the United States

OCTOBER TERM, 1936

No. 41

THE UNITED STATES, PETITIONER

v.

ROBERT ESNAULT-PELTERIE

ON WRIT OF CERTIORARI TO THE COURT OF CLAIMS

BRIEF FOR THE UNITED STATES

OPINION BELOW

The opinion of the Court of Claims is not yet reported (R. 38–75).

JURISDICTION

The interlocutory judgment of the Court of Claims was entered January 24, 1936 (R. 75). The petition for a writ of certiorari was filed April 24, 1936, and was granted June 1, 1936. The jurisdiction of this Court is invoked under Section 3 (b) of the Act of February 13, 1925.

QUESTIONS PRESENTED

1. Whether the patent in suit may be construed to cover a single lever for controlling the equilibrium of an airplane or whether it should be construed as being limited to a combination comprising a lever and a single integral or unitary tail structure of an airplane.

2. If the patent in suit may be construed to cover a single lever for controlling the equilibrium of an airplane, whether such a device was patentable over prior disclosures.

3. Whether the patent in suit covers a device that was patentable over respondent's French patent, No. 372753, which was applied for more than a year prior to the filing in this country of the application for the patent in suit.

4. Whether the patent in suit, application for which was filed in this country on January 16, 1908, is invalid by virtue of the fact that the claims alleged to cover the single control lever here involved were not inserted in the application until June 12, 1913; the control lever, during the intervening period, having come into general use in the United States, and having been described in printed publications.

5. Whether the respondent, by acquiescing in the rejection by the examiner of patents of claim 13, is estopped from contending that the claims of the patent in suit should be construed to cover

a single lever for operating the means for controlling the equilibrium of an airplane.

6. Whether the patent in suit is invalid by virtue of the fact that its claims, if construed to embrace a single equilibrium control lever, are not supported by its disclosure.

7. Whether the patent in suit is invalid by virtue of the fact that the control lever alleged to be covered by it was in public use in France prior to the date of its alleged invention by the respondent.

8. Whether the claims of the patent in suit were infringed by the United States.

STATUTES INVOLVED

The statutes involved will be found in the Appendix, *infra*, pp. 103–106.

STATEMENT

A. Introduction

This suit was brought by the respondent, Robert Esnault-Pelterie, a citizen and resident of France, against the United States in the Court of Claims, under the Act of June 25, 1910, as amended (U. S. Code, Title 35, Section 68), to recover compensation for the use of an airplane control lever said to be covered by United States Patent No. 1115795 issued to respondent on November 3, 1914.[1] A sec-

[1] A copy of this patent, plaintiff's exhibit 1, was by reference made a part of Finding IX of the court below (R. 13), and will be found at page 1 of the binder of exhibits which counsel have prepared for the convenience of this Court.

ond cause of action set forth in the petition is to recover compensation pursuant to an alleged implied contract for the manufacture and use by and for the United States in France between April 6, 1917, and November 11, 1918, of airplanes said to embody the inventions of the respondent's three French patents (R. 4).[2]

The device charged to infringe is a vertical lever, popularly known as a "joy-stick", mounted on a universal joint and capable of motion in all directions. It is connected with the control surfaces of the airplane, known as the "elevator" and the "ailerons", which in turn control the longitudinal and transverse attitudes of the craft. A fore and aft movement of the lever controls the "elevator", which in turn causes the airplane to ascend or descend; while a side to side movement of the lever controls the "ailerons", which in turn cause the airplane to tilt to the right or the left, as desired. The pilot manipulates the lever with his hand. It was held by the court below that Claim 2 and Claims 5-9 of the patent in suit cover the foregoing device and have been infringed. (Finding IX, R. 13, 38.) The lever is generally employed

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This binder contains in numerical order copies of all of the relevant exhibits which were made part of the findings below. The originals of the exhibits are on file in the office of the Clerk of this Court. The binder of exibits will be hereinafter referred to as "Binder."

[2] No proof was adduced in support of the second cause of action, and no recovery granted in respect thereto, so that it requires no consideration here.

in all but the heavier types of airplanes in use by the Army and the Navy (Finding XLVII, R. 37).

The court below found that at least one of each of three types of airplanes, known as Curtiss JN–4D, DeHaviland DH–4B, and Loening monoplane M–81, was manufactured for and used by the United States without the respondent's license or permission (Finding XIX, R. 22). It was stipulated that proof of the manufacture for or use by the United States of any airplanes other than these three and of any damage alleged to have resulted to the respondent, might be deferred until after an adjudication as to the questions of validity and infringement (Finding XXIII, R. 25). An interlocutory judgment was rendered adjudging the patent valid and infringed (R. 75).

The same patent was involved in the case of *Esnault-Pelterie* v. *Chance Vought Corporation* (C. C. A. 2d), 66 F. (2d) 474, affirming 56 F. (2d) 393, in which it was held that the claims of the patent should be narrowly construed as limited and restricted to the specific device disclosed in the specification, and that as so limited, the claims were not infringed by the modern airplane control lever or "joy-stick." In the instant case, on the other hand, the Court of Claims placed a broad construction on the patent and held it valid and infringed. There is thus a direct conflict between the holdings of Circuit Court of Appeals for the Second Circuit and the Court of Claims relative to the patent in suit.

B. Basic Problems of Aviation

An airplane is supported in the atmosphere through which it travels by the reaction of the air upon its wing surfaces. To secure this reaction a propeller and a motor are employed. Unlike vehicles that travel on land or water, aircraft must be controlled in three planes. Like a ship or land vehicle, its direction must be controlled by means of appropriate steering apparatus. In addition, however, it is necessary to control its longitudinal equilibrium, i. e., to cause the airplane to fly on a level or to ascend or descend; and its lateral equilibrium, i. e., to cause the airplane to fly parallel to the ground or to tilt or bank to one side or the other. (Finding X, R. 14–15.)

One of the basic problems that for many years baffled experimenters in aviation in connection with the development of heavier-than-air machines, was the question of maintaining lateral equilibrium. Inability to reach a solution of this difficulty was perhaps one of the principal obstacles in making airplanes possible. The matter came to a head in the first decade of this century. Among the leading pioneers in aviation were the Wright Brothers, who directed their efforts toward developing a heavier-than-air flying machine propelled by an engine. The first successful flight was made by the Wright Brothers at Kitty Hawk, North Carolina, in December 1903. That historic event represented the solution of a problem that

had been perplexing scientists and aviation experimenters for a long time.

The court below denominated the means for maintaining the lateral equilibrium of the airplane as "wing distortion" (R–39). The specific device by which this was accomplished by the Wright Brothers was known as wing warping. A portion of the outer end of each wing was subjected to a warping force, so that one end was inclined upward and the opposite end downward, or vice versa. By this process the airplane was caused to tilt to the right, or to the left, as desired. The original process of wing warping has been generaly superseded by the use of ailerons, i. e., hinged segments cut out of the wings, which may be turned up or down (R–40). The invention made by the Wright Brothers is embodied in United States Letters Patent, No. 821,393, issued on May 22, 1906 (Findings XXIV, XXXI, R. 25, 30; Binder, p. 26).

The Wright patent forms the basis of the practical art of flying "heavier-than-air" machines. Thus, in *Wright Company* v. *Herring-Curtiss Co.,* 211 Fed. 654, 655, the Circuit Court of Appeals for the Second Circuit, in upholding the Wright patent, stated that "the patentees may fairly be considered pioneers in the practical art of flying with heavier-than-air machines." See also *Wright Company* v. *Paulhan,* 177 Fed. 261. The court below in this case likewise stated that the Wright Brothers solved the problem of maintaining the equilibrium of the airplane (R–57–58).

C. Airplane Control Apparatus

As stated above, the basic apparatus by which the equilibrium of an airplane is controlled comprises the "elevator"—a horizontal tail surface hinged to the body of an airplane, which is used to control the longitudinal attitude of the craft—and the ailerons—hinged segments cut out of the wings, which are employed to control its lateral equilibrium. Some mechanism was needed, to be manipulated by the pilot for the purpose of effecting the desired motion of the elevator and the ailerons. The obvious and natural mechanism to be utilized for that purpose is a lever or a series of levers of some sort, which through intermediate connections would transmit the desired motions to the control surfaces.

Various types of apparatus of this class were disclosed in the early patents. Thus the French patent to Penaud and Gauchot, issued on February 18, 1876, suggests a vertical lever or rod, carrying a horizontal transverse bar, for the purpose of controlling the elevator and the rudder by its different movements (Findings XXIV, XXV, R. 25–26; Binder, p. 150). The French patent to Macedo, granted on July 3, 1899, suggests a somewhat similar vertical lever for the purpose of controlling the lateral equilibrium and the steering of the airplane (Findings XXIV, XXVII, R. 25, 27; Binder, p. 172). Still another apparatus of the same type is disclosed in the French patent to Laroze, dated

June 30, 1905 (Findings XXIV, XXVIII, R. 25, 28; Binder, p. 180).

Captain Ferber, of the French Army, was one of the early workers in the field of aviation (Finding XL, R–33), and in 1904 he built an airplane having a single horizontally mounted lever or rod, which was pushed or pulled for the purpose of operating the elevator, and which was swung from side to side for the purpose of steering the airplane (Finding XLI, R–34). Even prior to that time, Bleriot, who is remembered in the history of aeronautics as the man who in 1909 made the first flight across the English Channel, had constructed a flying machine which had a control system comprising a horizontal lever mounted on a universal joint and, therefore, capable of motion in all directions. The lever was connected to a tail surface, which constituted both a horizontal and a vertical rudder. (Finding XLII, R–35.)

Esnault-Pelterie, who was a contemporary of Captain Ferber and Bleriot, devised an apparatus consisting of two parallel levers. One of them was intended to operate the rudder for the purpose of steering the airplane, and the other was connected with the elevator and the wings for the purpose of controlling the longitudinal and lateral equilibrium. His first design, as disclosed by his first French patent (French Patent No. 372753, published April 18, 1907; Finding IV, R–7; Binder, pp. 189–192), proposed to place these two levers in a horizontal position. His second and third

French patents (French patent No. 373763, published May 27, 1907, and French patent No. 373818, published May 28, 1907; Findings III, V, R–8; Binder, pp. 199, 205), as well as his United States patent, which is involved in this litigation, suggested that the levers be installed in a vertical position. He does not appear ever to have put his first design into practice, but in 1907 he built an airplane in which his second design was utilized. It does not appear that more than one airplane was ever built embodying that mechanism (Finding VI, R–9).

The Wright Brothers developed and put into use an apparatus consisting of two vertical levers. Curtiss used a vertical lever on which was mounted a wheel, for the purpose of steering the airplane and controlling its longitudinal equilibrium, while a shoulder yoke strapped to the pilot's body was employed to affect its lateral equilibrium. (Finding XXXIX, R–33.)

D. Respondent's French Patents

Esnault-Pelterie obtained three patents in France relating to the general subject matter involved in this litigation. The application for his first patent, No. 372753, was filed on December 19, 1906. The patent was published on April 18, 1907 (Finding III, R–6; Binder, p. 184). In addition to other matters not material to this case, it disclosed two horizontally mounted levers for the purpose of

controlling the tail surfaces of the airplane. As stated above, it does not appear that any airplane was actually constructed in accordance with the disclosure of this patent (Finding IV, R–7–8).

The application for his second French patent—No. 373763—was filed on January 19, 1907, while his third patent, No. 373818, was applied for on January 22, 1907. Both were granted on March 28, 1907, and published on May 27 and May 28, 1907, respectively (Finding III, R. 6; Binder, p. 196). Both patents disclosed a pair of control levers placed in a vertical position, instead of horizontally as was done in the first patent. The left hand lever was intended to control the rudder, while the right hand lever was movable in all directions and was designed to control the longitudinal and lateral altitude of the airplane. The distinction between the latter two patents is found in the type of the tail surfaces proposed to be employed. In each instance the tail surfaces intended to control both the longitudinal equilibrium and the steering of the airplane consisted of a single integral unitary structure, instead of comprising separate and independent surfaces, such as the elevator and the rudder, as is the modern practice (Finding V, R–8). One airplane embodying the apparatus described in the third patent was constructed by Esnault-Pelterie (Finding VI, R. 9), while the apparatus described in the second patent does not appear ever to have been put into practice.

E. The Patent in Suit

The respondent's application, which resulted in the granting of the patent in suit, was filed in the Patent Office on January 16, 1908 (Finding VII, R. 10). As the application for the first French patent had been filed on December 19, 1906, more than a year had expired between that date and the filing of the application in this country. Consequently, the respondent was not entitled to cover in his American application any matter covered by the first French patent.[3] The application in this country, therefore, is directed to the subject matter of the respondent's second and third French patents, which were applied for less than one year prior to the filing of the application in the United States (Finding III, R. 6–7). (See also Opinion, R. 47.)[4]

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[3] R. S., Sec. 4887 (see Appendix, page 103, *infra*) in effect provides that a patent application filed in the United States by a person who has previously filed an application for a patent for the same invention in a foreign country, which affords similar privileges to citizens of the United States, shall have the same force and effect as the same application would have if filed in this country on the date on which the application was filed in such foreign country, provided the application in this country is filed within twelve months thereafter.

[4] By French law, an applicant for a patent on a basic or primary invention is given, for one year thereafter, the right to obtain all patents for "an *alteration*, improvement, or addition to the invention which forms the subject

The description and the drawings forming a part of the application disclosed an airplane with tail surfaces for the purpose of controlling the longitudinal equilibrium and steering. Three embodiments of the alleged invention are shown. In the first, the steering rudder and the elevator are mounted on an integral ring-like structure at the rear of the airplane in such manner that the rudder is rotated about a vertical axis, while the elevator rotates about a transverse horizontal axis. The second embodiment is an airplane with a single tail surface, which pivots about a horizontal longitudinal axis for the purpose of steering the airplane, and also about a transverse horizontal axis for the purpose of regulating its longitudinal equilibrium. In both embodiments there are shown two vertical levers to be manipulated by the pilot. The right hand lever is mounted on a universal joint and is capable of movement in all directions. It is connected by means of wires to the wings and the elevator in such manner that the movement of the lever to the right or left causes the wings to become warped and thereby the lateral attitude of the air-

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of the original patent", to the exclusion of all competitors (Article 18 of the Patent Law of France, dated July 5, 1844, as amended). The United States courts have taken judicial notice of this provision of the French law (cf. *Esnault-Pelterie* v. *Chance Vought*, 66 F. (2d) at p. 475, bottom of 1st column and top of second column; 56 F. (2d) at p. 395, bottom of second column).

plane changed, while a fore-and-aft movement of the lever causes the elevator to be inclined upward or downward as desired and the airplane to ascend or descend. The left hand lever regulates the steering of the craft (Finding XIII, R. 17–19). A third embodiment is the so-called "tandem-wing" structure (see p. 53, *infra*).

On February 1, 1909, the respondent rewrote the specifications. In addition to claiming other features of the airplane, not relevant to this litigation, the application contained claim 2, which purported to cover a lever controlling both lateral and longitudinal equilibrium, without indicating whether such lever was horizontal or vertical. It further contained claim 13, which was limited to a vertical control lever.

The Patent Office examiner rejected claim 13. Twice the applicant requested reconsideration, but the examiner adhered to his original determination. On May 23, 1912, the respondent cancelled the claim, thereby withdrawing from the consideration of the Patent Office the request for a patent on a vertical control lever. Thirteen months later, on June 12, 1913, the applicant filed additional claims, among which were claims covering the vertical control lever. These claims were allowed, and on November 3, 1914, the patent issued (Finding VIII, R. 10–13).

The charge of infringement is limited to claim 2 and claims 5–9, inclusive.

Claim 2 purports to cover the control lever generally without specifying whether its position is horizontal or vertical.

Claims 5, 6, and 9 relate to the single vertical control lever.

Claim 7 relates to the single vertical control lever with the limitation that such lever is operable by the reflex movements of the aviator's body.

Claim 8 purports to cover the single vertical lever with the limitation that it should so operate that its forward movement would direct the airplane downward, its rearward movement would elevate it, while its movements to the right and left would ~~raise~~ tilt the airplane to the right or left, respectively (Finding IX, R–13–14).

The claims in issue read as follows:

> 2. An aeroplane having distortable wings for maintaining transverse stability, a rudder for maintaining longitudinal stability, a lever controlling said wings and said rudder, a steering rudder, and a separate lever controlling said steering rudder.
>
> 5. In an aeroplane, the combination of means for producing lateral stability, means for producing longitudinal stability, and a single vertical lever movable in every direction for operating both said means for producing lateral stability and said means for producing longitudinal stability.
>
> 6. In an aeroplane, the combination of means for producing lateral stability, means for producing longitudinal stability, means

for steering in a horizontal plane, a single vertical lever movable in every direction for operating both said means for producing lateral stability and said means for producing longitudinal stability, and separate means for operating said steering means.

7. In an aeroplane, the combination of means for producing lateral stability, means for producing longitudinal stability, and a single vertical lever movable in every direction for operating both said means for producing lateral stability and said means for producing longitudinal stability, said single lever being operable by reflex movements of the body of an aviator to restore said aeroplane to an even keel when it departs therefrom in either a lateral or longitudinal direction.

8. In an aeroplane, the combination of means for producing lateral stability, means for producing longitudinal stability, and a single vertical lever movable in every direction operating upon both said means for producing lateral stability and said means for producing longitudinal stability, said lever, upon forward movement thereof, operating said means for producing longitudinal stability to direct the aeroplane downwardly, said lever, upon rearward movement thereof, operating said means for producing longitudinal stability to elevate the aeroplane, said lever, upon movement thereof to the right and left, operating said means for producing lateral stability to raise the aeroplane on the left and right respectively.

9. In an aeroplane, the combination of means for producing lateral stability, means for producing longitudinal stability and a single vertical lever for operating both said means for producing lateral stability and said means for producing longitudinal stability, said lever being mounted upon an universal joint and being oscillatable in every direction.

SPECIFICATION OF ERRORS TO BE URGED

The Court of Claims erred:

1. In holding that the patent in suit covers a single control lever that was patentable over prior disclosures.

2. In failing to hold that the claims of the patent in suit should be construed as being limited to a combination comprising a lever and a single integral or unitary tail structure of an airplane.

3. In holding that the patent in suit covers a device that was patentable over respondent's French patent, No. 372753, applied for on December 19, 1906, and issued on February 28, 1907.

4. In failing to hold that the patent in suit was invalid by virtue of the fact that, although the application therefor was filed on January 16, 1908, the claims alleged to cover the single control lever here involved were not inserted into the application until June 12, 1913; the control lever, during the intervening period, having come into general use in the United States and having been described in printed publications.

5. In failing to hold that respondent was estopped, by acquiescing in the rejection by the examiner of patents of claim 13, from contending that the claims of the patent in suit should be construed to cover a single lever for operating the means of controlling the equilibrium of an airplane.

6. In failing to hold that the patent in suit, if construed to embrace a single control lever, is invalid by virtue of the fact that its claims are not supported by its disclosure.

7. In failing to hold that the patent in suit, if construed to embrace a single control lever, is invalid by virtue of the fact that the control lever alleged to be covered by the patent was in public use in France prior to the date of its alleged invention by the respondent.

8. In holding that the claims of the patent in suit were infringed by the United States.

SUMMARY OF ARGUMENT

I

The airplane control lever or "joy-stick", which the patent in suit is claimed to cover, is not a patentable invention. A vertical lever mounted on a universal joint and operating two distinct mechanisms by its various movements, is a well known mechanical device and has been used in various arts. It was not invention to adapt it to an airplane, since it does not constitute invention to

apply a well known device to a new use. This is especially true in view of the fact that the prior patents on which the petitioner relies are in analogous arts. The airplane control lever was within the range of mechanical skill and did not rise to the dignity of an invention. There is no merit in the contention that the element of invention is found in the alleged instinctive character of the operation of the control lever.

II

In view of the prior art, the patent, even if valid, should be construed as limited to a combination comprising a pair of vertical control levers with a single integral or unitary tail surface. If so construed, the patent admittedly has not been infringed.

III

The respondent's first French patent was applied for more than twelve months prior to the filing of his application in the United States. Consequently, he is barred from receiving a patent in this country on the structure disclosed in his first French patent. However, there is no patentable difference between his first French patent and the patent in suit. The former disclosed horizontal levers, while the latter discloses vertical levers performing the same functions. It is not invention to change a lever from a horizontal to a vertical position.

IV

The claims of the patent are not supported by the disclosure. The specification shows a combination of two cooperating and coacting vertical levers connected with an integral tail surface. The claims purport to cover a single vertical lever operating independently.

V, VI, VII

The claims in suit on the vertical control lever were inserted in the application by amendment five and one-half years after the original filing. During the intervening period the control lever came into general use in this country. The courts guard the public against the enlargement of the scope of a patent application during its pendency in the Patent Office. A claim that had been previously a part of the application, and which purported to cover the vertical control lever, had been rejected by the Patent Office and had been canceled by the applicant. The present claims were inserted thirteen months later. By acquiescing in the rejection of the original claim the respondent is estopped from asserting that the claims in suit should be construed to cover the vertical control lever.

The respondent is not the first and original inventor of the control lever, as both Captain Ferber and Bleriot used it before he did. The respondent was aware of Bleriot's invention at least as early as the date on which the present claims were inserted into the application by amendment.

VIII

The petitioner's airplanes do not utilize the respondent's structure. The latter is a two-stick control system, while the petitioner uses a single control lever. The claims purport to cover the lever in combination with means for maintaining longitudinal and lateral stability. In petitioner's airplanes stability is maintained by certain built-in mechanisms, while the surfaces with which the lever is connected are used for the purpose of controlling the attitude or equilibrium of the airplane.

ARGUMENT

I

THE PATENT IN SUIT IS INVALID AS CLAIMING A DEVICE NOT PATENTABLE OVER PRIOR DISCLOSURES

The device which the respondent asserts is his invention and which he contends is covered by the patent in suit is a vertical lever mounted on a universal joint and capable of movement in all directions, which is installed in an airplane and is so connected with the elevator and ailerons as to make it possible for the pilot to control the former by a fore-and-aft motion, and the latter by a sidewise motion of the lever. The virtue of this contrivance is said to consist in the fact that by means of different movements of one lever it is possible to actuate two entirely different and distinct mechanisms. This device, however, is old and well

known and does not involve any element of novelty or patentability.

A. PRIOR PATENTS

As early as March 11, 1879, U. S. Patent No. 213079 was issued to Wadsworth (Finding XXIV, R. 25; Binder, p. 234).

The disclosure of the Wadsworth patent is summarized by the court below in Finding XXXII (R. 30), as follows:

> United States patent to Wadsworth, #213079, issued March 11, 1879, discloses a single vertical lever mounted on a universal joint and actuating one mechanism or engine by a motion in one plane and actuating a second mechanism or engine by a motion in another plane at right angles to the first plane. By an oblique or diagonal motion of the lever both mechanisms are capable of simultaneous actuation.

The foregoing summary of the Wadsworth device may be adopted without change of phraseology as a description of the modern airplane control lever, the construction of which is shown in detail in Finding XXI (R. 22–23).

The airplane control lever is "a single vertical lever mounted on a universal joint and actuating one mechanism [i. e., elevator], by a motion in one plane and actuating a second mechanism [i. e., ailerons] by a motion in another plane at right

angles to the first plane. By an oblique or diagonal motion of the lever both mechanisms are capable of simultaneous actuation."

The Court of Claims (R. 65) rejected the Wadsworth patent and did not consider it germane, on the ground that it disclosed an application of the device to the steering engine and the propelling engine of steam vessels, traction engines, and the like; that it related to a non-analogous art; and that it did not suggest the concept of the equilibrium control of an airplane. It is submitted that this was error, for two reasons.

First, Wadsworth makes it quite clear that he is not proposing a device for use in a particular art, or in conjunction with specific mechanisms. He expressly states that what he is patenting is a single lever mounted on a universal joint for the purpose of controlling the action of any two different mechanisms. He announces that it is his object "to control through one lever or handle the simultaneous or independent action of engines or mechanisms, so that they may be worked singly, together, or in opposition." (Wadsworth patent, defendant's exhibit D–112, lines 10–14, Binder, p. 235).

Thus, the invention is a generic one and is not limited or restricted to a specific art. It is a mechanical device found in a large repository of contrivances open to any person skilled in any art. "Certain devices are common to the arts as a whole,

because they are adapted for use in many situations." *In re Morgan,* 38 App. D. C. 274, 275.[5] The airplane "joy-stick" is nothing but the Wadsworth lever built into an airplane and attached by intermediate connections to the ailerons and the elevator.

It is well established that it does not constitute invention to take a well-known device and apply it to a new use or purpose. *Blake* v. *San Francisco,* 113 U. S. 679, 682; *Pennsylvania Railroad Co.* v. *Locomotive Co.,* 110 U. S. 490; *Wollensak* v. *Sargent,* 151 U. S. 221, 227; *Lovell Mfg. Co.* v. *Cary,* 147 U. S. 623; *Mast Foose Co.* v. *Stover Mfg. Co.,* 177 U. S. 485, 492–4.

Second, it is submitted that it was erroneous for the Court of Claims to hold that the specific application of his invention shown by Wadsworth was in an art not analogous to aviation. Wadsworth discussed the possible use of his device in connection with the steering apparatus and the engine of a steam vessel. It can hardly be said that marine navigation, aerial navigation, and land navigation are non-analogous arts. Types of apparatus used in

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[5] *L. Schreiber & Sons Co.* v. *Grimm* (C. C. A. 6th) 72 Fed. 671, 674–675 (ball and socket joint); *Warner Instrument Co.* v. *Stewart & Clark Mfg. Co.* (C. C. A. 7th) 185 Fed. 507 (swivel joint connection); *Muser* v. *Bell* (C. C. A. 2d) 278 Fed. 904, 912 (reversing mechanism); *In re Colman,* (App. D. C.) 30 F. (2d) 1000 (specific types of governor); *In re Weingartner* (Ct. of Customs & Patent App.) 58 F. (2d) 442 (transmission gears).

one class of vehicle or craft are frequently adopted for a different class of transportation facilities.[6]

United States patent to Weeber, #704156, issued on July 8, 1902 (Findings XXIV, XXXIII, R. 25, 30; Binder, p. 237), disclosed a single universally mounted lever for controlling by its various movements the steering apparatus and the brakes of an automobile. British patent to Wilson, #20022 of 1889, showed a similar lever for closing and opening electric circuits (Findings XXIV, XXXVI, R. 25, 31; Binder, p. 240). United States patent to Simpson, #909468, granted on January 12, 1909, disclosed a vertical shaft capable of being tilted in any direction for the purpose of controlling a hydroplane boat (Finding XXXVII, R. 31; Binder, p. 258).

None of the patents here discussed was cited by the Examiner during the pendency of the application in the Patent Office. This circumstance enhances their importance as anticipatory references.

It is clear from the foregoing summary of the prior art that the use of a single lever universally mounted for the purpose of controlling distinct mechanisms by its various movements was old and well known in the mechanical arts. Clearly the person who first designed the airplane joy-stick made but a judicious selection from the devices already available to him.

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[6] See pp. 34–35, *infra*.

Moreover, there was no novelty in the use of vertical levers for manipulating airplane controls. The French patent to Laroze issued in 1905 showed an airplane provided with a vertical lever which was rotated for the purpose of controlling the lateral equilibrium of the machine and which was pushed forward or pulled rearward for the purpose of controlling its longitudinal equilibrium (Findings XXIV, XXVIII, R. 25, 28; Binder, p. 175). This patent is a direct anticipation, for it discloses a single vertical lever, which by its various movements controls the lateral and longitudinal equilibrium of an airplane.

As taught by the Wright patent (Plaintiff's Exhibit 50, Binder, p. 26; see also Finding X, R. 14–15), there are *three,* and *only* three, fundamental movements or maneuvers which are executed by an airplane while flying. Three corresponding controls are required. With these three controls, all the required maneuvers of an airplane can be performed (R. 39–40):

(1) The first movement is the up-and-down one ("pitch"). That, the Wrights controlled by their "*elevator*" 31 in front of the plane.[7] The pilot lay face downward in the cradle 18, with his head toward the front of the machine. With his hands he grasped the roller 37. By twisting it he could

[7] See Figure 1, Wright Patent, Binder, p. 33.

tilt the elevator 31 to make the plane go up or down. The elevator is used in modern airplanes.

(2) The second movement is steering in a horizontal plane, as in a boat (this directional change is sometimes called "yaw"). This the Wrights accomplished by the vertical "*rudder*" 22 at the back of the plane. The vertical rudder is used in modern airplanes.

(3) The third movement is the "roll" or "banking" of the airplane about a longitudinal horizontal axis. It serves either to keep it upon an even keel laterally, or to tilt one wing higher than the other when it is desired to "bank" the airplane, as when making a turn. This movement was effected by the Wrights by distorting or "*warping*" the tips of the wings *a d, b c, e h, f g,* as indicated by the dotted lines in figure 1 of the patent. Such wing warping has now been superseded by the "ailerons" or small hinged flaps at the rear of the wings, which are generally used today, but the principle and operation of the two are identical (R. 40).

Both the second and third "organs"—rudder and wing tips—were controlled simultaneously, in the Wright machine (and the corresponding motion of the airplane produced), by sidewise movement of the cradle 18, upon which the pilot lay face down. He shifted to his *right* when he wanted the machine to turn to the *right,* and to his *left* when he wanted to turn to the *left.* A shift to the right turned the steering rudder 22 to the right by means of the

cable 27, and simultaneously warped the tips of the wings 1 and 2 to bank to the right. By shifting to the left, the pilot both steered and banked to the left.

The first "organ"—the elevator for ascending and descending—was controlled by the separate roller 37.

The Wright patent thus enunciates the fundamental principles of flight which are utilized in every airplane today. It shows the three fundamental movements of an airplane—vertical ("pitch"), horizontal ("steering" or "yaw"), and banking ("roll")—and provides a control for each.

As stated above, the Wrights later employed a separate vertical lever for operating the elevator and another vertical lever to control the wing warping and the steering rudder.[8]

As its title states, the Laroze patent (Defendant's Exhibit 6, Binder, p. 176) relates to "principles employed in the construction of an aeroplane *to insure its stability.*" (Italics added.) The patent opens with the statement that the whole problem of aviation may be reduced to the problem of *securing stability.* To that end the patentee provides "a simple device" for controlling the evolutions of the plane—namely, a single vertical lever with a steering wheel at the top—"which can *alone* [i. e., by itself] give to the apparatus a sufficient

[8] See page ~~27~~ 10, *supra.*

latitude to enable it to make evolutions with ease." (Italics added.)

The specification shows that Laroze, like the Wrights, fully understood the three fundamental movements of an airplane, and his diagrams show the three axes about which these movements take place. Not only does he provide the "organs" or control surfaces (ailerons; vertical and horizontal rudders) for producing or controlling these three movements of the plane to secure stability; but he also puts his "organs" under the control of the "simple device" which he describes as *a single vertical lever* with a steering wheel at the top.

Figure 4 (Binder, p. 175) shows the details of the Laroze control (R. 28). The upstanding vertical column HP is pivoted at P and surmounted by a steering wheel WHW′. The pilot sits behind the wheel facing outward from the page. The entire column is rocked fore-and-aft about pivot P, to control the up-and-down motion or "pitch" of the plane. The wheel is twisted to rotate the column about the vertical axis, HP, to control the ailerons shown at *a, b, c, d, e, f, a′, b′, c′, d′, e′, f′*.[9] This twisting, for example, by the pilot grasping the wheel at W and W′ and treating it like the han-

[9] The ailerons at each end of the fixed wing may be in one piece as indicated in figure 4, or in three pieces as shown in figure 1, where the two fixed wings are shown at A, B, C, D, and A′, B′, C′, D′, and the ailerons at *a, b, c, d, e, f*, and *a′, b′ c′, d′, e′, f′*.

dle bars of a bicycle, *rolls* or *banks* the plane to the right or left as the pilot may desire, by movement of the ailerons. Laroze still further simplifies his control by combining in the same instrumentality his steering function, to operate the vertical rudder E. This he accomplishes by making the wheel WHW′ capable of being turned like the steering wheel of an automobile, to steer the airplane in a horizontal direction.

Forward motion of the column HP causes the plane to nose up, and backward motion causes the plane to pitch down (Finding XXVIII, R. 28). That is the same response as in figure 7–a of the patent in suit, in which *forward* motion of the lever 86 causes the plane to nose *up,* and *backward* motion causes the plane to go *down.*

As the district court found in the Chance-Vought case (56 F. (2d) at p. 398, 1st column) in figures 1, 2, and 3, Laroze has a response opposite to that in figure 4. As in Fig. 6 of the patent in suit, *forward* motion of the column HP of the Laroze patent causes the plane to pitch *down,* and *backward* motion causes the plane to point *up.*

To pass from Laroze's figure 4 arrangement to his arrangement of figures 1, 2, and 3 (Binder, p. 175), a mere reversal of the linkage is necessary and seems plainly within the skill of the ordinary mechanic. Thus, the district court said (p. 398, 1st column, of 56 F. (2d)):

> The longitudinal response of the plane in Fig. 4 of the Laroze patent, and in Fig. 7a

> of the patent in suit, is *opposite* to the rocking movement of the lever or column HP. If it be desired, however, to rise or dip *with* the rocking movement of the lever or column HP, all that is needed is to reverse the linkage. *No such reversal of linkage is necessary in the modifications of Figs. 1, 2, and 3* [of Laroze]. (Italics supplied.)

Laroze and the patent in suit are alike in that both show *both* responses to fore and aft movement of the joy-stick. In neither is any emphasis put upon one response in preference to the other. As Judge Campbell said, following the quotation just given:

> In Laroze and in the patent in suit *both* responses are shown, and *in neither is any emphasis whatever put on any particular hook-up.* (Italics supplied.)

French patent No. 111574, issued to Penaud and Gauchot in 1876 (Findings XXIV, XXV, R. 25–26; Binder, p. 136), describes with prophetic accuracy many of the features incorporated in modern airplanes. For example, it shows substantially all of the fixed surfaces which are built into a modern plane to give it inherent stability, which, as will be shown hereafter, the respondent entirely avoided.

The control of the horizontal and vertical rudders is by a *single vertical lever,* surmounted by a horizontal cross bar. Pulling the lever back or pushing it forward causes the horizontal rudders to go up or down, just as in the patent in suit. As in

the patent in suit, no particular directional response is indicated in preference to the other. For steering in a horizontal plane, the cross-bar is turned like the handle bars of a bicycle (Finding XXV, R. 26).

French patent to Macedo, No. 290488, issued in 1899 (Finding XXIV, R. 25; Binder, p. 168), disclosed a flying machine in which a vertical lever controlled the lateral equilibrium of the craft by a fore-and-aft motion. By a rotating motion, the same lever steered the machine (Finding XXVII, R. 28).

As shown by the Wright patent, there are only three *possible* motions, and three corresponding controls, for an airplane. These were also clearly described by Laroze. The Wrights put two of them, wing-warping (roll) and vertical rudder (steering), under a single instrumentality, and controlled the horizontal rudder (pitch) separately. Later, the Wrights had a separate control for the vertical rudder. Laroze controlled all three movements by his single vertical lever with a steering wheel at the top. Penaud & Gauchot controlled their vertical and horizontal rudders by their single vertical lever, with a cross-bar at the top. In his first French patent (from which the patent in suit must, admittedly, be patentably different to be valid) the plaintiff put pitch and roll under control of a single *horizontal* lever, and steering under the control of a separate *horizontal* lever. In that state of the art, what room was there for

invention in the patent in suit, in controlling the very same movements by two *vertical* handles?

In view of the foregoing state of the art, it is submitted that Judge Manton was correct when in passing on the patent in suit in *Esnault-Pelterie* v. *Chance Vought Corporation,* 66 F. (2d) 474, 478, he said:

> There is no novelty in the use of a lever to operate two or three controls, or in determining, as an engineering problem, the choice as to which of the three controls should be operated by a single lever.
>
> * * * * *
>
> The great advance in flying aeroplanes has been due largely to improved engines, the weight of which, per horse power, has been greatly reduced so as to make possible increased speed and power with the same weight. This largely accounts for the superiority of modern aeroplanes over the prior art.

A similar view was expressed by Judge Campbell in the District Court in the last mentioned case, in the following language, 56 F. (2d) 393, 401:

> There certainly was no novelty in the use of a well-known control device, the lever, to effect the control of two of the three controls, nor in the selection of the two of the three controls to be so effected, as it was a mere matter of engineering choice as to which of the three organs should be operated by a single lever.

B. THE PRIOR PATENTS ARE IN ANALOGOUS ARTS

The Court of Claims discarded the Wadsworth, the Wilson, the Weeber, and the Simpson patents, discussed above, on the ground that they did not relate to arts analogous to that to which the patent in suit was directed. (See opinion R. 64–65.) It is submitted that this conclusion is erroneous. By implication, the opinion of the court below does not controvert the validity of the proposition that it does not constitute invention to adopt an old device to a new and unforeseen use. The court, however, indicates that this principle should be limited to instances in which the new use is in an analogous art, and it further holds that in this instance the arts are not analogous.

To say that control levers for boats and ships, for automobiles, and for airplanes are not in analogous arts seems untenable. For example, internal combustion engines are used on boats, automobiles, and airplanes. The internal combustion engine when first invented may have been patentable subject matter. On the other hand, to instal an internal combustion engine in a new type of vehicle would hardly constitute invention. Again, marine propellers had been well known and had been used as a mechanism for propelling steam vessels for a great many years. When airplanes were designed, propellers, in a modified form, were used in connection with airplanes for a similar purpose. Clearly, the use of propellers on

airplanes as means of propulsion was not patentable, in view of the fact that propellers were an old and well-known device.

The authorities clearly and inescapably lead to the conclusion that the patents upon which the respondent relies as anticipations of the patent in suit are in analogous arts.

Bush v. *Fox*, 5 H. L. C. 707; *Harwood* v. *Great Northern Railway Company*, 11 H. L. C. 654, 676; *Brown* v. *Piper*, 91 U. S. 37, 41; *Royer* v. *Roth*, 132 U. S. 201; *St. Germain* v. *Brunswick*, 135 U. S. 227; *Consolidated Roller Mill Company* v. *Walker*, 138 U. S. 124; *Ansonia Brass and Copper Company* v. *Electrical Supply Company*, 144 U. S. 11; *Powers-Kennedy Contracting Corporation* v. *Concrete Co.*, 282 U. S. 175.[10]

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[10] Patent Office tribunals have held that it is not invention to adapt the steering mechanism of a boat to an automobile (*Ex parte Ross*, 317 Patent Office Gazette 237), or a gyroscopic apparatus designed to indicate the rate of roll of a ship to an airplane (*Ex parte Sperry*, 2 U. S. Patents Quarterly 4). See also *Standard Caster & Wheel Co.* v. *Caster Socket Co.*, 113 Fed. 162, 164–165 (C. C. A. 6th); *Ransome Concrete Mach. Co.* v. *United Concrete Mach. Co.*, 177 Fed. 413, 415–416 (C. C. A. 2d) (tea mixing and concrete mixing machines held analogous); *Model Bottling Machinery Co.* v. *Anheuser-Busch Brewing Ass'n.* (C. C. A. 8th) 190 Fed. 573, 575 (art of curing fish and pasteurizing beer held analogous). *In re Schneider* (Ct. of Customs & Patent App.) 47 F. (2d) 970 (window sash weights and boxes for transportation of briquettes held analogous). *In re Endacott* (Ct. of Customs & Patent App.) 58 F. (2d) 444.

C. THE DEVICE DOES NOT RISE TO THE DIGNITY OF AN INVENTION

It is submitted that in the light of the prior art, the utilization of a vertical lever, mounted on a universal joint for the purpose of actuating the elevators and the ailerons of an airplane, was within the range of mechanical skill and did not rise to the dignity of an invention. To design it was within the skill of the art and did not require inventive genius.

The suggestions advanced from time to time by counsel and adopted by the Court of Claims, that the device made possible rapid advance of aviation and constituted a radical improvement in the construction of aircraft, even if correct, are immaterial.

The position of the Government on this point is fully substantiated by numerous decisions of this Court, in which patents on new devices of much greater and more far reaching importance and significance than the airplane joy-stick, were held invalid as covering not invention, but only the products of mechanical skill.

DeForest Radio Co. v. *General Electric Co.*, 283 U. S. 664 (Langmuir patent on the high-vacuum tube); *Paramount Publix Corp.* v. *American Tri-Ergon Corp.*, 294 U. S. 464 (process for producing sound films); *Altoona Publix Theatres, Inc.* v. *Tri-Ergon Corp.*, 294 U. S. 477 (machines for re-

cording and reproducing talking motion pictures); *Carbide Corporation of America* v. *American Patents Development Co.*, 283 U. S. 420 ("dry-ice"); *Aron* v. *Manhattan Railway Company*, 132 U. S. 84 (gates for elevated railroads); *Minerals Separation Corporation* v. *Magma Company*, 280 U. S. 400; *Powers-Kennedy Corporation* v. *Concrete Company*, 282 U. S. 175, 186; *Saranac Automatic Machine Corporation* v. *Wirebounds Patents Company*, 282 U. S. 704; *Smith* v. *Magic City Kennel Club*, 282 U. S. 784; *Permutit Co.* v. *Graver Corporation*, 284 U. S. 52; *Electric Cable Co.* v. *Edison Co.*, 292 U. S. 69.

The argument that the acceptance of the patented device by the industry is evidence of invention is negatived by the cases discussed above, as well as by many other decisions of this court. *Grant* v. *Walter*, 148 U. S. 547, 556; *McClain* v. *Ortmayer*, 141 U. S. 419, 428.

Applying the foregoing principles to the patent in suit, the conclusion seems inescapable that the adoption of a vertical lever mounted on a universal joint for the purpose of controlling by its movements in various directions, the elevator and the ailerons of an airplane, no matter how useful and desirable, was nothing more than the adaptation, in a manner not rising to the dignity of an invention, of well known principles and devices familiar to all skilled in the mechanical arts.

D. THERE IS NO MERIT IN THE CONTENTION THAT THE ELEMENT OF INVENTION IS FOUND IN THE ALLEGED INSTINCTIVE CHARACTER OF THE OPERATION OF THE CONTROL LEVER

The control lever of an airplane is usually so connected with the elevator and the ailerons that a forward movement of the lever causes the airplane to nose downward; a rearward movement of the lever causes the airplane to nose upward; a movement of the lever to the right causes the airplane to bank or tilt downward to the right; while a movement of the lever to the left causes the airship to bank or tilt downward to the left.

It has been contended by the respondent, and was held by the Court below, that the fact that the airplane follows the direction of the tilt of the stick makes the operation of the device quasi-instinctive and practically reflex, and, therefore, exceedingly simple. It is asserted that the natural instinct of the pilot would cause him unconsciously to move the lever in the direction in which he desires the airplane to respond. It is then argued that this is a feature justifying the conclusion that the device was a product of inventive genius rather than mechanical skill. We submit that this position is untenable for a number of reasons.

If instinctiveness is in fact a feature of the airplane control system, it is no part of the invention disclosed or covered by the patent in suit. It is not inherent in the lever itself. The lever can be

connected at will in such manner as to make the directional responses of the airplane opposite to those of the movements of the stick, or it can be connected in such manner as to make the directional responses of the craft in accordance therewith. In other words, the alleged instinctiveness results not from the control lever, but from the arrangement of the linkages between the lever and the elevator and the ailerons. If the connections on the modern type of airplane were reversed, the manner of operation of the control lever would be "contra-instinctive", and yet the same device would still be utilized.

The specific arrangement of these intermediate connections was not covered by the claims of the patent in suit, probably because it was recognized that it would hardly constitute patentable subject matter. Consequently, the alleged instinctive character of the operation of the control system may not be used to support the contention that the airplane joy-stick involves the element of invention.

There is another basic fallacy in the respondent's contention in this regard. If the element of discovery or invention is found in the manner of operation of the device and not solely in the mechanism itself, such concept, no matter how useful or valuable it may be, may not be made the subject matter of a patent, unless, perhaps, the patent covers a process. The patent law provides for

the granting of monopolies on inventions or discoveries of any new or useful art (i. e., process), machine, manufacture, or composition of matter (R. S. 4886; U. S. Code, Title 35, Sec. 31). If the invention consists of a machine or mechanism, only the structure itself is patentable. Its function or its mode of operation may not be so covered. This is a well established principle from which this Court has never deviated.

Thus, in *Knapp* v. *Morss,* 150 U. S. 221, 227, it was stated that "it is well settled by the authorities that the end or purpose sought to be accomplished by the device is not the subject of a patent. The invention covered thereby must consist of new and useful means of obtaining that end. In other words, the subject of a patent is the device or mechanical means by which the desired result is to be secured." See also *Holland Furniture Co.* v. *Perkins Glue Co.,* 277 U. S. 245.

In *LeRoy* v. *Tatham,* 14 How. 156, 175, it was said that "A patent is not good for an effect, or the result of a certain process, as that would prohibit all other persons from making the same thing by any means whatsoever."

Similarly, in *DeForest Radio Co.* v. *General Electric Co.,* 283 U. S. 664, 684, Mr. Justice Stone stated: "It is method and device which may be patented and not the scientific explanation of their operation."

The point we are discussing is well illustrated by the decision of this Court in *Carver* v. *Hyde,* 16 Pet. 513, 519, which involved a patent on an improvement on the cotton gin. The improvement consisted of giving a new form to the ribs composing the grate through which the fibres of the cotton passed. Instead of making each rib of equal thickness throughout, as had been the prior practice, the patentee proposed that at the point at which the fibres were carried through, the thickness of each rib should be greater than at other points, and should be equal to the length of the fibres. The purpose of the improvement was to prevent the grate from becoming choked or clogged. It appeared, however, that the beneficent effect claimed by the patentee was obtained as a result not merely of the form or shape of the rib, but also of the manner in which it was connected with the framework. The court held in an opinion written by Chief Justice Taney that "the end to be accomplished is not the subject of a patent." He further stated that since the defendant did not use the patentee's connections between the ribs and the frame, there was no infringement. In the case at bar, however, the patent does not even contain any claims on the connections.

As a matter of fact, the virtue of the alleged instinctive character of the operation of the control system has been grossly exaggerated and can

hardly be successfully urged in support of the contention that the design of the joy-stick involves invention. Indeed, the Court of Claims itself points out that when an airplane assumes certain abnormal attitudes, such as a spinning nose dive, the pilot cannot depend solely upon the obvious manipulation of the lever in accordance with his instinctive or reflex action. It further states that in blind flying, i. e., flying in fog or through clouds, the pilot has no reference mark such as the horizon, and cannot trust to his balancing instinct to control the airplane, but must direct it by means of instruments designed to guide him under such conditions (Finding XII, R. 16).

Moreover, even in level flight, the element of instinctiveness of necessity plays but a small part in the operation of an airplane. The court below, in its opinion (R. 50) states:

> The defendant in its brief urges that the operation of the joy stick is a matter of acquired habit. We agree with this latter statement with the qualification, however, that any given habit is easier to acquire if it is instinctive rather than contra-instinctive.

In other words, the argument based upon the theory of instinctiveness, in its ultimate analysis, amounts merely to the contention that the manner of operation of the control lever can be acquired by the pilot with greater facility if it is instinctive, rather than contra-instinctive. Surely this is

not sufficient to constitute an invention as distinguished from the result of mechanical skill.[11]

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[11] In *King* v. *Gallun*, 109 U. S. 99, 101, this Court stated that "In deciding whether the patent covers an article the making of which requires invention, we are not required to shut our eyes to matters of common knowledge or things in common use."

In accordance with this principle, it seems proper to call the attention of the Court to well-known controls that sometimes operate in a manner denominated in this litigation as instinctive, and at times contra-instinctive, and yet are managed with equal facility in both instances. Thus, the tiller on a sailboat is moved to the right to make the boat veer to the left, and vice versa. The steering wheel on ships and boats is occasionally so connected that the wheel has to be turned in the direction in which the ship is to be steered, and at times the connections are exactly opposite; and yet the art of steering vessels can be acquired with equal facility irrespective of whether the wheel is connected in one manner or the other. In driving an automobile, the driver sometimes holds the steering wheel at the bottom and sometimes at the top. If he holds it at the bottom, he moves his hands to the left to steer the car to the right, and vice versa; while if he holds the wheel at the top, he moves his hands in the direction in which it is desired to turn the automobile. This interchangeable feature has never been the source of any difficulty to drivers of automobiles. The standard gear-shift on an automobile is pushed forward when it is desired to have the vehicle move rearward. Early automobiles were equipped with horizontal steering levers, which operated in the reverse direction from that in which it was desired to steer the car. A rowboat is commonly steered in a manner which would be denominated contra-instinctive, i. e., the oarsman pulls on the right oar in order to steer to his left and vice versa—and yet no difficulty arises from that circumstance.

The foregoing illustrations seem to demonstrate that facility in operating controls of vehicles, ships, etc., is a matter of habit that is acquired as easily when the response to the controls is contra-instinctive, as when it is instinctive.

As a matter of fact, the suggestion of instinctiveness in the operation of the control lever is a pure afterthought adduced at a late date in an endeavor to sustain the patent. It clearly was not within the contemplation of the patentee when the application for letters patent was filed. The specification will be read in vain in an effort to find any reference, direct or indirect, to the alleged instinctive mode of operation of the joy-stick. It is silent on that point. An examination of the drawings (Binder, p. 7) demonstrates that this thought could not have been in the mind of the patentee, for they show two modes of operation of the joy-stick: one, in which the responses of the airplane are "instinctive", i. e., in which the airplane tilts in the direction of the stick; and the other, disclosed in Figure 7a (Binder, p. 9) in which the responses are "contrainstinctive", i. e., in which the airplane tilts in the direction opposite to that of the movement of the stick (Finding XIII, Paragraph 8–9, R. 18). Apparently the patentee considered the two modes of operation interchangeable and both included within his invention.[12]

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[12] The court below (R. 52) refers in its opinion to the fact that testimony had been adduced to the effect that the construction shown in Figure 7 (a) was the result of a draftsman's error. There is no finding to that effect, however. Moreover, the patent speaks for itself, and the specification can hardly be varied by extrinsic testimony. If Figure 7 (a) was, indeed, an inadvertent error, the statute provides for its correction by an application for a reissue patent. The respondent has not availed himself of this remedy.

It is true that Claim 8 refers to movements of the airplane that are in the same direction as those of the lever. That claim, however, was introduced into the application by amendment on June 12, 1913—five and one-half years after the application had been filed and long after the vertical joy-stick had been adopted by the industry on a large scale. There is no support for that feature of the claim in the specification, and consequently, the claim is invalid. *Permutit Company* v. *Graver Corporation,* 284 U. S. 52.

The observations made by Judge Manton in passing upon this point in *Esnault-Pelterie* v. *Chance Vought Corporation,* are very pertinent, 66 F. (2d) 474, 477:

> The appellant makes claim that there is an instinctive use by the operator of the control levers of the patent in suit in pushing forward to go down and pulling backward to go up. But the patent makes no claim that this operation is preferred to the opposite one of pushing forward to go up and backward to go down. It is not described as part of the invention. In Fig. 7a of the patent in suit, the joy-stick is shown connected by a rod to a vertical arm so that forward motion of the joy-stick causes the plane to point up and a backward pull pushes the plane down. It is agreed that this disclosure is unequivocal. The patent lays no emphasis upon either direc-

> tional response in preference to the other. Indeed, this virtue on which appellant wishes to establish patentability is opposed by two out of the three embodiments illustrated and described, and, conceding that it is inherent in the third, it is not described as part of the invention, nor was it used in the only embodiment made by the patentee. No invention may be claimed for this. *Permutit Co.* v. *Graver Corp.*, 284 U. S. 52, 52 S. Ct. 53, 76 L. Ed. 163.

Judge Campbell in the District Court in that case commented as follows upon this point, 56 F. (2d) 393, 402:

> It does seem to me in the light of all the circumstances, that the claim of a "single lever being operable by reflex movements of the body of the aviator to restore said aeroplane to an even keel when it departs therefrom in either a lateral or longitudinal direction" is clearly an afterthought and not shown in the original specification covered by the original claims. It certainly is not sufficient, in my opinion, to give novelty to the substitution of the lever of the patent in suit over the levers of the prior art.

II

The Patent, if Valid, Should Be Construed as Limited to a Combination Comprising a Pair of Vertical Control Levers With a Single Integral or Unitary Tail Surface of an Airplane

The unique feature which distinguishes the construction disclosed in the Esnault-Pelterie patent consists in the unusual structure of the tail surfaces. As heretofore indicated, modern airplanes are equipped with a hinged horizontal tail surface at the rear, which by being turned up or down causes the airplane to ascend or descend. This tail surface is known as the "elevator." In addition, the airplane is provided with a wholly distinct vertical rudder also hinged to the rear, for the purpose of steering (Finding XXI, R. 22–23). Esnault-Pelterie, on the other hand, proposed to construct an airplane in which the elevator and rudder would be combined into a single integral unitary structure. Two embodiments or applications of this concept are suggested. The first (Binder, p. 2) consists of mounting the elevator and the rudder inside of a large ring attached to the rear of the airplane. This structure, generally referred to in this litigation as the "ring-tail", is rotated about a vertical axis for the purpose of operating the rudder, and about a transverse horizontal axis for the purpose of operating the elevator.

The second embodiment (Binder, p. 3) shows a single tail surface, which may be rotated about the horizontal longitudinal axis of the airplane for the purpose of steering, and about the transverse horizontal axis for the purpose of acting as an elevator. This structure is generally referred to as the "bird-tail". (Finding XIII, R. 17)[13]

Both embodiments involve the use of two vertical levers manipulated by the pilot, the right hand lever being connected with the tail surfaces in such manner as to operate the elevator, while the left hand lever is so connected therewith as to operate the rudder. The right hand lever is likewise connected with the wings in order to control the transverse equilibrium of the airplane. The foregoing is demonstrable by an analysis of the respondent's patents.

In the drawing of his first French patent (defendant's exhibit 7, Binder, p. 195), a plan view of the airplane is shown in Figure 2 and a side elevation in Figure 1. Figure 4 shows the arrangement of the two *horizontal* control levers 22 and 23, which, we submit, it required no invention to turn into the *vertical* position of the patent in suit. The

[13] It does not appear that any airplanes were ever built embodying the "ring-tail" structure. One machine was constructed by Esnault-Pelterie, in which the "bird-tail" conception was utilized. However, the idea of the integral or unitary tail structure was quickly abandoned and separate elevators and rudders came into general use.

mechanical operation of the plane is described in Finding IV (R. 7).

Referring to figure 4, the right-hand lever is shown at 22. It is operated by the pilot with his right hand. Moving the end of the stick *up* causes the plane to go *up,* and moving it *down* causes the plane to go *down.* Moving the stick 22 to the *left* distorts the wings and causes the plane to roll or tip to the *left,* while moving it to the *right* causes the plane to roll to the *right* (R. 7). Thus, this early French patent provided directional response of plane-movement in accord with the movement of a single stick operated by one hand of the pilot.

Sidewise movement of the similar stick 23 (figure 4), operated by the pilot with his left hand, *steers* the plane to the left or right in a horizontal direction, by operation of the steering rudder 4 shown near the upper right of figure 1, but the patent does not indicate in which direction the lever is moved, in order to produce a desired directional response of the plane (R. 7, bottom).

Thus the two horizontal levers 22 and 23, in the plaintiff's first French patent, control the three fundamental movements of the plane—pitch, steering, and roll. Pitch and roll are controlled by the lever 22 and steering by the lever 23.

The lever 23 was intended, also, by up-and-down motion, to have the additional function of tilting the front and back wings simultaneously, so that the plane could rise or descend on an even keel

(R. 8, second paragraph). That function is not in controversy. Esnault-Pelterie abandoned it when he filed his later French patents and the application for the patent in suit.

The United States patent in suit states that:

> The present invention has for its object a *monoplan* aeroplane with one or several pairs of wings which may be directed or distorted as desired, and provided with rudders or with a tail, the combination of such means having the effect of providing for the longitudinal and transverse stability as well as for the desired direction and ascent and descent of the machine. (Italics supplied.) (P. 1, lines 8–16; Binder, p. 1.)

It will be recognized at once that the entire stated object of the alleged invention, except for the word which we have italicized in the foregoing quotation, is found in the prior patent to the Wrights. In addition, the Wright specification states that their invention may be embodied in a monoplane [14] (Wright patent p. 1, ls. 70–72), and the drawing shows a tail structure 23, supporting the vertical rudder 22. (Binder, pp. 26, 33.)

Thus, at the outset, it can be taken as one of the established facts in the case that the entire stated object of the patent in suit had already been disclosed and accomplished by the Wrights. In fact, the lower court found (R. 58, top) that the re-

[14] The Wright patent refers to each "wing" as an "aeroplane", and the drawing shows a "biplane."

spondent "*endeavored to* [but] did *not* solve" the problem of equilibrium or stability, which had several years previously been solved by the Wrights.

The patent in suit then goes on to state generally, and later to describe in detail, three particular "embodiments" of the alleged invention (p. 1, ls. 17–60, Binder, p. 1). To this end the patent has eight sheets of drawings, with twenty-four figures. Of the three different forms of airplane constituting "embodiments of the invention", two ("ring tail" and "tandem wing monoplane") have never been built, so far as the record discloses, and only a single machine was ever attempted according to the third ("bird tail"). That was by Esnault-Pelterie in France, in 1907, where after a number of flights it was relegated to a museum (Finding VI, R. 9). No one has since constructed any of the three forms of airplane disclosed in the patent.

The three forms or embodiments of the alleged invention are:

(1) The so-called "ring tail" construction shown in Figures 1 to 5, sheet 1 (Binder, p. 5); in Figures 1–a and 3–a, sheet 2 (Binder, p. 6); in Figure 6, on sheet 3 (Binder, p. 7); and in Figures 16, 17, 18, and 19, on sheet 8 (Binder, p. 12). It is described in the specification as follows (p. 1, lines 17–37, Binder, p. 1):

> A first embodiment of the invention comprises a single pair of distortable wings and

> steering rudders for the direction and ascent, the getting out of shape or distorting of the wings resulting in the obtaining of transverse stability and such distorting being obtained by means of subtended stay-wires suitably operated for pulling down simultaneously the fore portion of one wing and the aft portion of the other, or vice versa. The steering rudder is vertical and may be rotated about a vertical axis, while the rudder which steers the aeroplane upward or down (called for convenience the "ascensional" rudder) and which is horizontal and is integral with the vertical rudder, may be rotated about a transverse horizontal axis in such a way as to secure the longitudinal stability of the machine and allow of the ascent and descent to be effected.

(2) The so-called "bird tail" construction shown in figure 10, sheet 3 (Binder, p. 7); in figures 7 and 8, sheet 4 (Binder, p. 8); and in figures 7–a and 8–a, sheet 5 (Binder, p. 9). This is described in the specification as follows (p. 1, lines 38–52; Binder, p. 1):

> A second embodiment of the invention comprises a pair of distortable wings arranged in the same manner as in the previously described construction, and a single horizontal rudder or tail capable of pivoting about a horizontal longitudinal axis and also about a transverse horizontal axis. This

> last rudder or tail has the functions of the vertical and horizontal rudders previously described, and when pivoting about the longitudinal axis controls the direction of the machine, whereas, when pivoting about the transverse horizontal axis, it effects the ascent and descent of the machine or holds it level.

(3) The "tandem wing monoplane" construction, like Esnault-Pelterie's 1906 French patent, shown in figure 9, sheet 4 (Binder, p. 8) figure 9a, sheet 6 (Binder, p. 9). Of this the specification says (p. 1, ls. 53–60; Binder, p. 1):

> A third embodiment of the invention comprises two pairs of wings both distortable, but one of such pairs of wings is so mounted as to be capable of pivoting about a horizontal longitudinal axis like the tail or rudder of the previously described modification, with a view of so steering the machine in either direction.

A system of *vertical* levers or handles may be employed for operating the controls of the first two modifications. These control levers are, we submit, simply a *vertical* arrangement of the *horizontal* levers 22 and 23 of Esnault Pelterie's 1906 French patent. The third "embodiment" of the alleged invention may, in fact, be operated by the two horizontal levers of the 1906 French patent, "or in *any other* suitable way."

Referring to figure 6 (Binder, p. 7), the right-hand handle or lever 61 is, in function and operation, like the right-hand handle or lever 22 of Esnault-Pelterie's 1906 French patent (Binder, p. 195), the subject-matter of which was dedicated to the public in this country. The two levers differ only in that lever 61 of the patent in suit is *vertical,* while lever 22 of the prior patent is *horizontal.* In the patent in suit, moving the lever 61 to the *left* rolls the plane to the *left,* and moving it to the *right* rolls the plane to the *right,* as in the earlier patent. Moving the lever 61 *forward* causes the plane to nose *down,* and moving it *backward* causes the plane to nose *up.*[15] The left hand lever 68 is moved *forward* to turn the airplane to the *right* and *backward* to turn the plane to the *left,* in a horizontal plane (Finding XIII, R. 17). The steering is accomplished by twisting the ring with which the lever 68 is connected by rod 69. The ring is mounted upon an *eccentrically* located ball-and-socket joint (fig. 19,

[15] Judge Campbell, in his opinion in the Eastern District of New York in the *Chance Vought* case (56 F. (2d) at p. 401, near top of 2nd column), held that such motion of the lever 61 is *less* "natural" or "instinctive" than the motion of the lever 22 in the dedicated 1906 patent, in which the lever 22 is moved *up* to go *up*, *down* to go *down*, *left* to roll *left*, and *right* to roll *right.* That plaintiff attributed "instinct" operation to the patent in suit while denying it of the *more* natural operation of his earlier patent shows, we think, that the argument is one born of expediency, not based upon merit.

Binder, p. 12) and carries both the vertical rudders 57 (fig. 1, Binder, p. 5) and the horizontal rudders or "elevators" 60 (fig. 3, Binder, p. 5). Their action is, therefore, necessarily interdependent.

The arrangement of the handles or levers 86 and 80 in figure 10 (Binder, p. 7), which shows the controls for the "bird tail" construction, is similar. Here there is a single, flat, tail member 71, which may be swung up and down about the horizontal axis 73, or tilted sidewise about its central axis which is in line with 76, 75, 74 in the longitudinal axis of the plane (p. 1, ls. 44 *et seq.;* Binder, p. 1). Considering first the lever 86, forward motion causes the airplane to pitch down, backward pull to nose up, and movement left or right causes the machine to roll correspondingly. The lever 80, when moved left or right, steers the plane by twisting the tail 71 "in a bird-like manner", which signifies turning it about the longitudinal axis 74 in the bearing 75 (p. 3, ls. 26–27; Binder, p. 3).

Almost hopeless confusion of the "bird tail" controls will thus be seen to result from the fact that the rudder response is "*inverted*" (reversed) when the tail passes through its normal or "neutral" position. Thus, if, in making a turn, the lever 86 is *forward,* moving the lever 80 to the *left* steers the plane to the right, and moving the lever 80 to the *right,* steers the plane to the *left;* if, however, the lever 86 is pulled *back* past the vertical,

the rudder responses become just the opposite, and the pilot must instantaneously shift the lever 80 in the opposite direction, if he desires to keep on turning in the *same* direction. That is, to steer to the *left* the pilot sometimes moves the lever 80 to the *right,* and sometimes to the *left,* depending upon the position of lever 86. This is apparent from the fact that both the levers 80 and 86 act directly upon the same "bird tail" 71, as shown in the drawing. (See also, Finding XIV, R. 19.)

The "third embodiment" of the patent in suit (p. 1, l. 53; Binder, p. 1), the "tandem wing monoplane" (Figs. 9 and 9–a; Binder, pp. 8, 10), has no vertical or horizontal (elevator) rudders at all. It is only very briefly referred to in the specification (p. 3, second column, ls. 70–82; Binder, p. 3). It has two pairs of distortable wings, but their control system, if any, is not described beyond the statement that both pairs of wings "are distortable and may be effected the same as in the previously described constructions ('ring tail' and 'bird tail'), *or in any other suitable way.*" Certainly, there is no emphasis in that upon the desirability of any particular form or arrangement of handles or levers, whether vertical or horizontal, and the fact is that this third embodiment of the "invention" is the same as Fig. 3 of Esnault-Pelterie's third French patent (Binder, p. 203; Findings V and VII, R. 8, 10) which states that the "system of control" may be that of his 1906

French patent, that is, the two *interdependent, horizontal* levers. Their interdependency is expressly found by the court below (Finding IV, R. 7–8). This construction of the third French patent, hence of the patent in suit, in its "third embodiment", was said by the lower court to be "*predicated upon a false scientific basis* as to the structural features of a successful airplane, and the reaction of essential elements to the air in order to secure equilibrium" (R. 59).

Thus of the three "embodiments of the invention" disclosed in the patent in suit, the first, or "ring tail", steers *left* or *right* by *forward* and *backward* motion of the steering lever; the second, or "bird tail", steers left or right sometimes in response to the *corresponding,* and sometimes in response to the *opposite,* motion of the steering lever, depending upon the position of the other lever; and the third form, or "tandem wing", is controlled, for pitch, roll, and steering, by the two interdependent *horizontal* sticks "predicated upon a false scientific basis" as in the patentee's first French patent of 1906.

A fundamental and self-evident fact with respect to the patent in suit is that in both the "ring tail" and "bird tail" embodiments, as well as in the "tandem wing" embodiment, the control over the machine exercised by the two levers, 61 and 68 (Fig. 6; Binder, p. 7) or 86 and 80 (Fig. 10; Binder, p. 7), is *not independent* (Finding XIV,

R. 19). Operation of either lever affects the "organ" actuated by the other. *"Pitch"* and *"steering"*—that is, vertical and horizontal motion—can not be controlled by either lever alone. In the "ring tail" construction, the vertical rudders (57 in Fig. 1; Binder, p. 5) for steering in a *horizontal* plane, and the horizontal rudders or "elevators" 60 (Fig. 3; Binder, p. 5) for steering *up and down,* are rigidly mounted on the same ring. While performing any maneuver, movement of the left hand lever 68, intended for steering in the *horizontal* plane, affects the *pitch* of the machine, and movement of the lever 61, intended for controlling the *pitch,* affects steering by producing an undesired "yaw." The same is true with respect to the "bird tail" construction shown in Figure 10 (Binder, p. 7). The levers 80 and 86 both act upon *the same surface,* 71, and their operation is so interdependent that the action of 80 is *reversed* when 86 passes through "neutral" (i. e., the vertical position), as just explained.[16]

Even the most eulogistic description of the respondent's machine recognizes the fundamental interdependence of the stabilizing and steering controls, "like in the Wright machine" (R. 9), in

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[16] In the "ring tail" the ring is hung *eccentrically* upon a ball and socket joint (Fig. 5, Fig. 19), and the operating rod 69, Figure 6, is attached to the ring at the point 70, *also eccentric,* as best shown in Figure 19. This accentuates the inherent interaction of the two controls.

which the rudder was tied to the wing-warping control by a cable.

The Circuit Court of Appeals for the Second Circuit in *Esnault-Pelterie* v. *Chance Vought Corp.*, 66 F. (2d) 474, 478, held as follows:

> Assuming the validity of the patent in suit, it must be limited to the structure disclosed employing the bird tail or ring tail unit for control about the longitudinal and vertical axes with a restricted range of equivalents.

If the claims are so limited and restricted, admittedly there would be no infringement by the Government airplanes.

The courts have not infrequently inserted as a limitation into a claim an element which was disclosed in the specification and which was obviously an indispensable or essential feature of the invention, particularly if, as here, that was a measure of the actual advance made by the patentee over the prior art. In other cases this has been done in order to save a claim from an adjudication of invalidity. *Sargent* v. *Hall Safe and Lock Company*, 114 U. S. 63, 73, 85; *Snow* v. *Lake Shore and Michigan Southern Railway Company*, 121 U. S. 617, 618, 622, 629–630; *Holland Fur. Co.* v. *Perkins Glue Co*, 277 U. S. 245, 256.

III

The Vertical Control Lever Did Not Constitute Invention Over the Structure Disclosed in the Respondent's 1906 French Patent

As has been heretofore pointed out, the respondent applied for his first patent in France on December 19, 1906 (Finding III, R. 6). His application in this country was not filed until January 16, 1908—more than twelve months subsequently to the French filing date. Consequently, under Section 4887 of the Revised Statutes (U. S. Code, Title 35, Section 32), the respondent was barred from receiving in the United States a patent on the alleged invention disclosed by the first French patent.[17]

The Court of Claims properly held that "because of this section of the statutes it would be impossible for plaintiff to obtain a monopoly under the United States patent for the same invention disclosed in its [sic] first French patent, but the statute does not preclude him from obtaining a monopoly by virtue of the United States patent for an invention which differs from or is a patentable improvement upon the structure disclosed in its [sic] first patent" (R. 47, 48).

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[17] R. S., Sec. 4887 (U. S. Code, Title 35, Sec. 32), provides that no person shall be barred from receiving a patent in the United States unless the application for the first patent was filed more than twelve months prior to the filing of the application in this country, in which case no patent shall be granted in this country.

The Circuit Court of Appeals for the Second Circuit held to the same effect. *Esnault-Pelterie* v. *Chance Vought Corporation,* 66 F. (2d) 474, 475.

At that point, however, the two courts parted company, the Court of Claims holding that there was a patentable difference between the vertical control lever and the structure disclosed in Esnault-Pelterie's first French patent, while the Circuit Court of Appeals for the Second Circuit concluded that the plaintiff's inventive act was exhausted in his earliest application, and that the vertical lever was a nonpatentable improvement on, or modification of, his first structure. It is submitted that the result reached in the Second Circuit was correct.

The respondent's first French patent showed two horizontal levers. (Fig. 4; Binder, p. 195). The right hand lever was so constructed as to be capable of motion in all directions. The longitudinal position of the machine was controlled by raising or lowering the lever, while its transverse attitude was controlled by manipulating the lever to the right or to the left. An oblique movement affected both the longitudinal and transverse position. The lever was raised in order to cause the machine to rise and vice versa. The airplane rolled to the right when the lever was pushed to the right and vice versa. The left hand lever was employed to steer the craft (Finding IV, R. 7).

The court below characterized the horizontal levers of respondent's 1906 French patent, which he first tried to patent here (R. 10; 47), as "evidently predicated upon a false scientific basis" (R. 59), and said that "plaintiff's scientific knowledge *immediately* disclosed to him the *fatal defects* in his *first* French patent [that of 1906], and he *promptly* abandoned it. No such device was ever constructed, and, *almost immediately following*, the vertical lever mechanism came into existence" (R. 59).

Respondent's first French patent, with the *horizontal* levers, was applied for December 19, 1906, and the "almost immediately following" second and third French patents, showing vertical levers, were applied for January 19 and January 22, 1907, respectively (Finding III, R. 6–7).

But neither the "evidently false scientific basis" of his first French patent (R. 59), nor the fact that "plaintiff's scientific knowledge immediately disclosed to him the fatal defects" thereof (R. 59), nor his prompt abandonment of the horizontal levers in favor of vertical ones (R. 59), appears to have deterred the respondent from endeavoring to patent in this country the arrangement of horizontal handles which he is said to have long before abandoned in France.

The lower court expressly found that on December 10, 1907, some eleven months after his scientific knowledge had disclosed to him the fatal defects of his first French patent (R. 59), the respondent, at Paris, nevertheless "signed and

took oath to an application for United States patent" (R. 10, top), which was forwarded to his attorneys in New York and which included the drawings and specifications of his *first* French patent (Finding III, R. 10).

The second and third French patents and the United States patent disclosed the same pair of levers utilized for the same purpose, except that they were mounted in a vertical rather than in a horizontal position. (Binder, pp. 202, 209.) We submit that this change in the position of the levers from the horizontal to the vertical was not invention, but a mere mechanical alteration which was outside of the purview of the patent laws. *Atlantic Works* v. *Brady*, 107 U. S. 192, 199–200.[18]

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[18] The opinion in *Atlantic Works* v. *Brady*, cited in the text, contains the following succinct summary of the pertinent principles:

"The process of development in manufactures creates a constant demand for new appliances, which the skill of ordinary head-workmen and engineers is generally adequate to devise and which, indeed, are the natural and proper outgrowth of such development. Each step forward prepares the way for the next, and each is usually taken by spontaneous trials and attempts in a hundred different places. To grant to a single party a monopoly of every slight advance made, except where the exercise of invention somewhat above ordinary mechanical or engineering skill, is distinctly shown, is unjust in principle, and injurious in its consequences.

"The design of the patent laws is to reward those who make some substantial discovery or invention which adds to our knowledge and makes a step in advance in the useful arts. Such inventors are worthy of all favor. It was never the object of those laws to grant a monopoly for every trifling device, every shadow of a shade of an idea, which would nat-

This was the conclusion reached in the Second Circuit (*Esnault-Pelterie* v. *Chance Vought Corporation*, 66 F. (2d) 474, 477). Judge Manton summarizes the ruling as follows:

> The advantage found or claimed by the appellant for both the French patent No. 372,753 and the patent in suit is the same; that is, the whole equilibrium or balance of the machine may be controlled by the pilot with one hand. The structure of the French patent was operative, and could be applied to a modern plane for control. Fig. 9 of the patent in suit embodies one form of the invention and is substantially identical with Fig. 2 of the French patent No. 372753 and Fig. 3 of the French patent No. 373818; the only difference being that the rigid wings of the French patent No. 372753 have become warpable for lateral control instead of being rotated about a transverse axis, and also one of the wings has been converted into a bird tail for rotation about a longitudinal axis to simulate bird flight.

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urally and spontaneously occur to any skilled mechanic or operator in the ordinary progress of manufactures. Such an indiscriminate creation of exclusive privileges tends rather to obstruct than to stimulate invention. It creates a class of speculative schemers who make it their business to watch the advancing wave of improvement and gather its foam in the form of patented monopolies which enable them to lay a heavy tax upon the industry of the country without contributing anything to the real advancement of the arts. It embarrasses the honest pursuit of business with fears and apprehensions of concealed liens and unknown liabilities to lawsuits and vexatious accountings for profits made in good faith."

> In French patent No. 373818 the aeroplane of Fig. 3 is described as similar to the one which formed the subject-matter of French patent No. 372753, and it is stated that the same control mechanism, which includes the horizontal lever, may be employed for controlling the machine. In both the French patent No. 372753 and the patent in suit, appellant makes the same choice of putting longitudinal and lateral controls under one lever and putting the directional control under another, and the only difference here is the vertical position of the sticks instead of the horizontal position of the early French patent No. 372753.

The structure covered by Esnault-Pelterie's first French patent, No. 372753, is in the public domain, so far as the United States is concerned, in view of the fact that no patent was applied for in this country within twelve months after the French filing date. If, as we contend and as the Circuit Court of Appeals for the Second Circuit held, the structure covered by the second and third French patents and by the United States patent, is not patentable as compared with the earlier structure and constitutes only a mechanical modification of the latter, the patent in suit must be held void. *Underwood* v. *Gerber,* 149 U. S. 224; *Toledo Scale Co.* v. *Computing Scale Co.,* 9 F. (2d) 823, 824.[19]

[19] In *Olmsted* v. *Andrews*, 77 Fed. 835, 839, it was held that it is not "invention to cause a device to work vertically that theretofore operated horizontally."

IV

The Claims of the Patent in Suit Are Not Supported by the Disclosure

The discussion has thus far proceeded on the assumption *arguendo* that the vertical control lever was disclosed and properly claimed by the patent in suit. While the patent does in fact contain claims which, standing alone and read apart from the rest of the text and without reference to the prior art, seem to cover the single vertical lever used for the purpose of regulating the lateral and longitudinal attitudes of an airplane, the description and the drawings do not in fact disclose or show such a mechanism. The claims in question, as will be shown hereafter, were introduced into the application about five and one-half years subsequently to its filing date and after the use of the vertical control lever had become common in aeronautics.

It is, of course, fundamental that the claims of a patent must be fully supported by the disclosure and that a claim not so justified is void. *Knox* v. *Quicksilver Mining Co.*, 4 Fed. 809; *Fulton Co.* v. *Powers Regulator Co.*, 263 Fed. 578, 580; *Westinghouse Electric & Manufacturing Co.* v. *Metropolitan Electric Manufacturing Co.*, 290 F. 661, 664.

The patent in suit does not disclose a single vertical lever for the purpose of controlling the apparatus that governs the longitudinal and lateral

positions of the airplane. It is quite apparent that at the time he filed his application the respondent did not contemplate such a mechanism. The apparatus that he evidently had in mind and which he disclosed to the world, was a combination of two cooperating and co-acting levers connected with an integral tail surface or with radially rotating wings. The right hand lever was to be used for the purpose of governing the lateral and the longitudinal equilibrium of the craft, while the left hand lever was to be used for steering. But since the same tail surface acted as both an elevator and a rudder, and since the right hand and the left hand levers were connected with it, it was necessary to operate the levers in conjunction with each other. Otherwise it would not have been possible to steer the airplane without also causing it to ascend or descend and vice versa (Findings XIV–XVI, R. 19–21).[20] We have heretofore shown in detail the interdependence of the two levers in the Esnault-Pelterie patent (see pp. 51–59, *supra*) and will not reiterate that discussion.

As shown in the findings, Esnault-Pelterie built but one airship embodying his peculiar and impracticable control apparatus.

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[20] The findings indicate that the device disclosed by the patent in suit was operative. (Finding XVII, R. 21.) This fact is not disputed, but is not germane. The question at issue on this branch of the case is not whether the respondent's device is operative, but whether it is the structure and functions in the manner indicated by the claims.

The "joy stick" or vertical control lever, on the other hand, is an entirely different type of mechanism, for it operates independently of other apparatus. The claims, if construed, as the respondent attempts to read them on the control lever find no support in the disclosure and cannot be considered valid. They constitute an attempt to secure a monopoly on something which the patentee did not invent, or, disclose to the public.

V

The Patent Is Invalid by Virtue of the Fact That the Claims on the Control Lever Were Not Inserted in the Application Until Five and One-half Years After Filing, While the Device Came Into General Use in the United States Prior to That Date

The application for the patent in suit was filed on January 16, 1908 (Finding VII, R. 10). The original claims did not contain any reference to the vertical control lever (Finding VIII, R. 10). They were directed to other features of the disclosure. Thus, Claim 1 related to a peculiar construction of the warping wings. Claims 2, 3, 5, and 6 related to the unique integral structure of the tail surfaces. Claim 4 attempted to cover the use of two separate levers, without indicating whether they were horizontal or vertical. Claims 7 and 8 related solely to structural details.

The prosecution of the application was extremely dilatory, as though the applicant desired to keep the application pending for as long a time as pos-

sible. On March 10, 1908, less than two months after the filing of the application, the examiner rendered his first action requiring certain changes. (Binder, p. 58.) On February 1, 1909, almost eleven months later, the plaintiff presented an amendment. The applicant's attorneys inserted three new sheets of drawings, canceled one of the original sheets, and directed the patent office to "*erase the specification and claims* (not including signing clause and signatures)", and inserted an entire new specification and claims. (Binder, p. 59.) For all that appears from any oath ever filed by the applicant, everything that was thus inserted on February 1, 1909, and thereafter (which comprises the entire specification, all the claims, many of the drawings, and the entire matter of instinctive response—in fact, the whole description except the "*signing clause and signatures*")—was "his lawyer's contrivance." Being inserted by amendment, it required an oath which the plaintiff "might have found it difficult to take, and for want of it the patent is void. Rev. Stat., Sec. 4892." (*Steward* v. *American Lava Company,* 215 U. S. 161, at pp. 166, top, 68). The patent is void on that ground.[21]

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[21] By cancellation of the original claims upon rejection by the Patent Office, Esnault-Pelterie admitted that he was *not* the inventor of the *only* claims to which he ever made oath. The patent is void on authority of *Cutter Co.* v. *Metropolitan* (C. C. A. 2d) 275 Fed. 158, at page 162 top, where the court rules almost the identical point, following the *Lava* case.

In the "substitute specification and claims" inserted by the amendment of February 1, 1909, the new claims included two (originally number 12 and 13, renumbered 11 and 12, and again renumbered 7 and 8, and finally canceled) one of which (Claim 7) we quote below. Had these claims of 1909 been granted in the patent, they would, in terms, have embraced the petitioner's accused machines. Their subsequent cancellation upon rejection, accompanied by acceptance of the more restricted claims in suit, which exclude the petitioner, is, therefore, necessarily fatal to respondent's charge of infringement. One of the canceled claims is as follows (Binder, pp. 71, 75, 78, 79, 89, 93, 96, 98):

> 7. An aeroplane having means for *controlling* its inclination and a single lever for operating said means to *control* both the *longitudinal* and the *transverse* stability of the apparatus, said lever being arranged to oscillate in different vertical planes, means for transmitting its movement in one plane to the means for *governing* the longitudinal inclination, and means for transmitting its movement in the other plane to the means for *determining* the transverse stability. (Italics supplied.)

The point is, that the canceled claim specifies "means for *controlling*" the inclination of the plane and a lever "for operating said means to *control* both the longitudinal and transverse stability", and to transmit the motion of the lever to the "means for *governing* the longitudinal inclina-

tion" and to the "means for *determining* the transverse stability." These are broad terms, inclusive of both "producing" and "counteracting" or overcoming" stability. But after cancellation of this claim, and its companion, upon rejection by the Patent Office, claims of limited scope were inserted instead (those here in suit), in which the levers are specified as being for "*producing*" or "*maintaining*" lateral and longitudinal stability. In petitioner's constructions, the inherent stability of the plane is "overcome" or "counteracted" by moving the levers, but is "produced" and "maintained" by the built-in characteristics giving inherent and automatic stability. Thus, while petitioner's planes were, in terms, responsive to the canceled claims, rejected by the Patent Office, they certainly are not to the limited claims later inserted, and now in suit—for the reasons explained in detail hereafter (pp. 85 et seq.).

Within a month—on March 2, 1909—Claim 13 was rejected for lack of invention because of the French patent to Laroze.[22] (Binder, p. 75.) Twice the respondent requested a reconsideration of this ruling, but on May 10, 1910, and again on May 27, 1911, the examiner reiterated his rejection. (Binder, pp. 88, 96.) On May 23, 1912, the plaintiff acquiesced in this decision and withdrew Claim 13 from the application. (Binder, p. 98.)

On June 12, 1913, almost thirteen months later and nearly five and one-half years after the filing

[22] The Laroze patent is discussed above, pages 28 et seq.

of the original application, the claims involved in this litigation, other than Claim 2, were inserted by amendment, and after some exchange of correspondence were finally granted (Binder, pp. 105, 115). The patent issued on November 3, 1914 (Findings VIII, IX, R. 10–13).

During the prosecution of the application, numerous modifications and additions were made in the drawings. None of them was verified by the applicant's oath.

On each occasion, Esnault-Pelterie consumed the full statutory time permitted him for amending his application, while the Patent Office in each instance made a very prompt reply. This is significant because, beginning in 1910, the public in this country was using the mechanism which is now asserted to have been his invention (R. 32, Finding XXXVIII).

Long before the present claims were inserted in the application, the vertical control lever came into general use, both in France and in the United States. Thus, it appears that airplanes manufactured by Bleriot and Farman in France containing the vertical stick control, were brought to the United States in 1910 and 1911 and were used in exhibition flights (Finding XXXVIII, R. 32). It can hardly be supposed that the patentee, who admittedly was very active in aviation, was not aware of this development. The courts assiduously and zealously guard the public against the enlargement of the scope of a patent application during its

pendency in the Patent Office. This rule is indispensable and vital for the protection of the public against unjustified and unauthorized monopolies. Without it, inventors, by introducing subsequent developments into a patent application, might be in a position to get the benefit of the earlier date for a later invention. Moreover, they might consciously or unconsciously be influenced by devices which they saw enter into commercial or industrial use after the filing of the application.

The necessity for the application of this rule clearly appears in the case at bar. Suppose on June 12, 1913, the plaintiff had filed an original application for a patent on the vertical control lever, instead of adding claims to cover that device to the application which he had filed in 1908. The Patent Office would undoubtedly have rejected the claims, for as has been shown above, the vertical control lever had come into general public use several years previously. In 1913 this apparatus even in its application to airplanes involved no novelty. By using the amendment process, however, Esnault-Pelterie seeks the benefit of the 1908 date. We submit that this result should not be countenanced.

The authorities are clear that under the circumstances just discussed, the claims should be declared invalid.

In *Railway Co.* v. *Sayles*, 97 U. S. 554, the patent application, which related to a railroad brake, was

filed in June 1847. The claims were rejected by the Patent Office. Five years subsequently to the original filing date the applicant modified and enlarged his application by amendment and in 1852 a patent was granted. During the intervening period the art had been rapidly developing. The patent was held invalid. The opinion contains the following observations on the point here under discussion (p. 563):

> Courts should regard with jealousy and disfavor any attempts to enlarge the scope of an application once filed, or of a patent once granted, the effect of which would be to enable the patentee to appropriate other inventions made prior to such alteration, or to appropriate that which has, in the meantime, gone into public use.

In *Eagleton Manufacturing Co.* v. *West, etc., Manufacturing Co.*, 111 U. S. 490, there was involved a patent on furniture springs. The application in its original form purported to cover a process of producing furniture springs known as "japanning." Later, by amendment, the applicant set forth the discovery that the application of heat would impart temper to the springs. The court held that the enlarged claims could receive no consideration, and that the validity of the patent should be adjudicated on the basis of the original form of the application. The conclusion was further reached that the application as first filed did

not disclose any patentable invention and that, therefore, the patent was invalid.

In *Steward* v. *American Lava Co.*, 215 U. S. 161, there was presented for adjudication the validity of a patent on a tip for an acetylene gas burner. The application in its original form referred to the forcing of gas through contracted openings at great pressure in order to produce a hollow shaped funnel flame. In an amended specification the applicant pointed out that the essence of his apparatus was to provide so short a chamber or cylinder as to prevent the mixing of the air taken into it, and to emit the current of gas surrounded by the greater part of such air as an envelope or film. It was held that this enlargement of the application was not entitled to consideration.

These principles have not infrequently been applied by the lower courts, *Cramer Manufacturing Co.* v. *Nims Pump Co.*, 9 F. (2d) 914; *Victor Talking Machine Co.* v. *Brunswick-Balke-Collender Co.*, 8 F. (2d) 41, affirmed, 273 U. S. 670; *Kintner* v. *Atlantic Communication Co.*, 230 Fed. 829, affirmed, 240 Fed. 716;[23] *A. Schrader's Son, Inc.* v. *James Martin Corp.*, 294 Fed. 620; *Hestonville, etc., Railway Co.* v. *McDuffee*, 185 Fed. 798, 802.

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[23] In this case the court took occasion to point out that in the early stages of an art, vigilance must be exercised to prevent a result by which after-acquired knowledge gives to a patentee that valuable control which would not have been his but for a later or a newly expressed thought which he seeks to antedate.

VI

The Respondent, by Acquiescing in the Rejection of Claim 13 Is Estopped From Asserting That the Claims of the Patent in Suit Should Be Construed to Cover the Vertical Control Lever

As we have pointed out, Claim 13, which was rejected on March 2, 1909, on the French patent to Laroze, was intended to cover the vertical control lever (Finding VIII, R. 12). The claim read as follows:

> An aeroplane having means for controlling its inclination and *a single lever for operating said means to control both the longitudinal and the transverse stability of the apparatus; said lever being arranged to oscillate in different vertical planes,* means for transmitting its movement in one plane to the means for governing the longitudinal inclination, and means for transmitting its movement in the other plane to the means for determining the transverse stability, said lever being mounted to permit also an oblique movement having components in each of said planes so as to actuate simultaneously the means for establishing longitudinal stability and that for establishing transverse stability. (Italics added.)

The applicant did not choose to avail himself of the right granted to him by law to appeal from the decision of the examiner after the latter declined on reconsideration to reverse his ruling. On the contrary, the applicant acquiesced in the exam-

iner's determination and on May 23, 1912, cancelled the claim. Almost thirteen months later, on June 12, 1913, he filed a new set of claims, among which are the claims involved in this litigation. (Binder, p. 105.)

The law is clear that the applicant, having acquiesced in the examiner's rejection of the original claim without prosecuting an appeal from his ruling, is bound by the decision and is estopped from asserting that claims introduced and allowed subsequently should be given the same construction as the claim that had been previously disallowed and cancelled. On that basis the patent in its present form may not be construed to cover the vertical control lever. A situation identical with that involved in the case at bar was presented in *Morgan Envelope Co.* v. *Albany Paper Co.*, 152 U. S. 425, 429. The patent dealt with a means for packing tissue paper in the form of a continuous band of oblong or oval shape. The claim was rejected as indefinite as well as because it was anticipated by prior art. The applicant amended his application by modifying his claim. The court indicated that the modified claim read as broadly as the original claim, but nevertheless held that it could not be construed to apply to the construction covered by the claim that had been previously rejected. Mr. Justice Brown stated:

> But the patentee having once presented his claim in that form, and the Patent Office

> having rejected it, and he having acquiesced in such rejection, he is, under the repeated decisions of this court, now estopped to claim the benefit of his rejected claim or such a construction of his present claim as would be equivalent thereto. *Leggett* v. *Avery,* 101 U. S. 256; *Shepard* v. *Carrigan,* 116 U. S. 593; *Crawford* v. *Heysinger,* 123 U. S. 589, 606; *Union Metallic Cartridge Co.* v. *United States Cartridge Co.,* 112 U. S. 624.
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> It is true that these were cases where the original claim was broader than the one allowed, but the principle is the same if the rejected claim be narrower. Why the claim of the present patent was allowed after the rejection of the narrower claim does not appear. The objections made to the claim as originally presented seem to be equally applicable to this.

The same principle was more recently applied in *I. T. S. Rubber Co.* v. *Essex Rubber Co.;* 272 U. S. 429, 443, and *Smith* v. *Magic City Kennel Club,* 282 U. S. 784, 789.

The court below in its opinion calls attention to the fact that Claim 2, which was introduced into the application on February 1, 1909, remained in the case continuously during the Patent Office proceedings and constitutes Claim 2 in its present form (R. 56). That claim reads as follows (R. 12):

> An aeroplane having distortable wings for maintaining transverse stability, a rud-

> der for maintaining longitudinal stability, a lever controlling said wings and said rudder, a steering rudder, and a separate lever controlling said steering rudder.

The claim is not limited to a vertically disposed lever, but is sufficiently broad to cover a lever located in any position whatsoever—horizontal, vertical, or otherwise. This claim is clearly void, in view of the fact that it is anticipated by Esnault-Pelterie's first French patent, which showed a horizontal control lever.[24] As was held both by the Court of Claims in this case and by the Circuit Court of Appeals in the *Chance Vought Corporation* case, the patent in suit can be sustained, if at all, only if it covers a structure that is patentably different from that disclosed in Esnault-Pelterie's earliest French patent, since in the United States that structure is in the public domain.

VII

Esnault-Pelterie was not the Inventor of the Airplane Control Lever

The facts clearly indicate that Esnault-Pelterie was not the inventor of the modern airplane control lever. As early as 1904—almost three years before the respondent filed his first French application—Captain Ferber used a single horizontal lever for operating the elevator and for steering the airplane (Finding XLI, R. 34). Even prior to

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[24] See pages 60–65, supra.

that—between 1901 and 1903—Bleriot had constructed an airplane in which the control system was operated by a horizontal lever mounted on a universal joint (Findings XLII, XLIII, XLVI, R. 35–37). By formal recitals contained in a contract made between Esnault-Pelterie and Bleriot, on November 1, 1911, Esnault-Pelterie solemnly admitted that Bleriot was the prior inventor of the mechanism. The contract states: "Mr. Bleriot has been able to prove to Mr. Esnault-Pelterie that he was in prior, legitimate, and personal possession of the invention—that is to say, of the single lever mounted on a cardan [i. e., universal] joint * * *" (Finding XLIV, R. 36).

Article III of the contract provides as follows (R. 36–37):

> By reason of the legitimate and prior possession strictly limited to the person of Mr. Bleriot, the latter will be able to provide his machines with his arrangement of a single bell lever without paying any royalty to Mr. Esnault-Pelterie, or, in other words, he will have the free use of his invention for all the levers with which his apparatus shall be provided and for all those that he will furnish directly to the private industry.[25]

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[25] Throughout this litigation much has been made by the respondent's counsel of the fact that Esnault-Pelterie's French patents were held valid in that country. In view of the differences between the French and the American patent law, however, that fact does not justify an inference that the French courts held Esnault-Pelterie to be the first inventor. While in the United States a patent is awarded only to the

Bleriot had proved, to the satisfaction of the respondent, that Bleriot had himself, as early as 1901–1903, constructed a flying machine having a "cardan" or universally mounted lever, with handles at the end, for operating an integral horizontal and vertical rudder, such as the integral "ring" and "bird" tails of the patent in suit. This was established to respondent's admitted satisfaction by a letter written in February 1911 by one Vautrin, the mechanic who built the machine for Bleriot, to respondent's French attorney, Armengaud. As a result of this evidence, on November 1, 1911, three years before the grant of the United States patent in suit, respondent entered into an agreement with Bleriot to pool their French patents to the end that, between them, they should "secure * * * the ownership of the single lever control of the organs of stabilization in air-

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first and original *inventor*, in France the patentee need not be the first inventor. In that country the *first applicant* is entitled to a patent, provided the invention had not previously been disclosed in a printed publication. The purpose of the French patent law is to reward the person who first discloses the invention to the public rather than the person who first makes the invention. A person who can show that he made or practiced the invention prior to the time that the patentee filed his application for a patent is entitled to a free license, but this circumstance does not invalidate the patent. Consequently the fact that Bleriot had a free license to use the invention is in itself an indication that he either made or practiced the invention before Esnault-Pelterie applied for his patent.

planes" (R. 36), in an effort to levy toll upon the French aircraft industry.[26]

This contract recited that, by proofs accepted by respondent, Bleriot had been able to prove to respondent that Bleriot "was in *prior, legitimate,* and personal possession *of the invention*—that is to say, *of the single lever mounted on a cardan* [universal] *joint*" (R. 36). They then went on to arrange for the division between them of whatever royalties they might be able to collect for the use, by the French aircraft industry, of "the single bell levers mounted in cardan (universal joint)" (R. 37, Article IV).

The lower court dismissed the Bleriot defense on the ground that the phrase "in prior, legitimate, and personal possession of the invention" is a term of art in the French patent law, which "indicates the secret possession of knowledge legitimately obtained and is not an admission of priority of invention" (R. 69), and that there was no evidence to show *what* knowledge, if any, the respondent had of Bleriot's work "on January 19, 1907, the effective filing date of the patent in suit" (R. 69).

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[26] It must be remembered that respondent was *then* asserting his first or *horizontal* lever French patent of 1906 in France as the basic or fundamental one in the suits there and treated his second and third French patents (to which the United States patent in suit is said to correspond) as for "*minor mechanical variations*" of the 1906 patent; *Esnault-Pelterie* v. *Chance Vought*, 66 F. (2d) 477, bottom of 2d col., p. 478, top.

But this, we think, entirely misses the point. The real point is, we urge, that at least as early as 1911 the respondent *knew,* and *admitted,* that Bleriot was the first inventor, hence that respondent was *not* the first inventor of the alleged invention—at least so far as the universally mounted ("cardan") control lever is concerned. In the terms of the admission made in the contract (R. 36, Finding XLIV), Bleriot was admitted by the respondent to be the first inventor of "* * * *the invention*—that is to say, of the single lever mounted on a cardan joint * * *"—without reference to whether the lever was horizontal or vertical. That was a formal admission by the respondent, solemnly made in a written instrument dated November 1, 1911. It is fatal to the patent, because, under the United States statute (R. S. Sec. 4920), it is a complete defense to a patent to show that the patentee "was not the original, and first inventor." *Alexander Milburn Co.* v. *Davis-Bournonville Co.,* 270 U. S. 390, at p. 401, near bottom (opinion by Mr. Justice Holmes).

It was not until June 1913 that claims 5 to 8 of the patent in suit were presented to the United States Patent Office, and claim 9 was first presented a year after that. When those claims were presented, respondent knew, because he had previously solemnly admitted, in writing, that he was *not* the first inventor of their subject-matter. Hence respondent is demonstrated (since he admitted it), to

have known, prior to asserting claims here in suit, that he was *not* the first inventor of *"the invention."* And, on any construction, he *knew* that he was not the first inventor of the subject-matter of claim 2 in suit when he canceled and then reasserted it in 1913. Perhaps this accounts for the fact that none of the claims in suit are covered by the oath of the inventor; they were drawn by his solicitors and filed by them as amendments. Respondent never went so far as to swear that he was the first inventor of the subject-matter of any of them. Such an oath he "might have found it difficult to take, and for want of it the patent is void"; *Steward* v. *American Lava Co.,* 215 U. S. 161, at p. 168, near bottom.

In any event, by the written admission of the respondent he has known since prior to 1913, when the claims in suit were inserted in the application, that at least one, and we think all, of the claims in suit are invalid. *But there has never been any disclaimer.* Failure to disclaim a claim admittedly known for *twenty-three years* to be invalid is certainly such an "unreasonable delay" as to invalidate the whole patent.[27] *Ensten* v. *Simon, Ascher*

[27] The petitioner has contended that prior discovery and prior use of the invention does not affect the validity of the patent in suit in view of the fact that they took place in a foreign country (R. S., Sec. 4923; U. S. Code, Title 35, Sec. 72). It is highly doubtful, however, whether it can be said to be within the intendment of the statute that prior use in a foreign country should not bar the issuance of a patent to a citizen of the same country as that in which the use took

& Co., 282 U. S. 445, at pp. 452–453; *Altoona Publix Theatres* v. *American Tri-Ergon Corp.*, 294 U. S. 477, at p. 493, middle.

VIII

The Patent in Suit Has Not Been Infringed by the Petitioner

The alleged infringing airplanes are all fundamentally different from those of the patent in suit in means, operation, and result. As regards stability and control they are virtually the *antithesis* of the machines of the patent.

For infringement to exist it has long been settled that the petitioner must have substantially the same (or equivalent) *means,* operating in substantially the same *way,* to produce substantially the same *result* as the patent in suit. *Cimiotti Unhairing Co.* v. *American Fur Refining Co.*, 198 U. S. 399, at p. 414; *Kokomo Fence Machine Co.* v. *Kitselman;* 189 U. S. 8, at p. 24; *Westinghouse* v. *Boyden Power Brake Co.*, 170 U. S. 537, 568.

Petitioner's planes do not have the substantial identity of means, operation, or result which is a condition precedent to a finding of infringement.

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place. The Act was intended purely for the protection of American inventors against evidence of prior use abroad and should be construed in accordance with its spirit. See *United States* v. *Kirby*, 7 Wall. 482, 486; *Church of the Hold Trinity* v. *United States*, 143 U. S. 457; *Ozawa* v. *United States*, 260 U. S. 178, 194; *Barrett* v. *Van Pelt*, 268 U. S. 85, 90; *Helvering* v. *New York Trust Co.*, 292 U. S. 455, 464.

The claims in suit do *not* find even verbal or literal response in the planes which are charged as infringements. Moreover, as shown heretofore, during prosecution of the application for the patent in suit respondent acquiesced in the rejection of broader claims, which might have applied to the accused machines, and accepted in their stead the claims in suit, each of which is expressly limited to exclude the petitioner's constructions.

It is found as a fact (R. 15, Finding XI) that "an airplane may be built with a certain amount of transverse and lateral [sic., longitudinal] stability inherent in its structure." "By virtue of these lateral and longitudinal stabilizing tendencies, a plane in normal flight, when its attitude is disturbed by a gust of air, will of itself tend to regain its normal attitude *without any manipulation of the controls by the pilot*" (R. 16, top). (Italics added.)

This inherent transverse stability is built into the plane by giving to the wings a "dihedral" angle (R. 15, bottom); that is, looking at the plane head-on, instead of making the wings flat from tip to tip, they are lower at the center than at the tips, to form a very broad, flat "V." This is, of course, inherent in the construction of the plane and is not under the control of the pilot. It has been known for years (cf. Penaud & Gauchot patent discussed *supra,* p. 31), but is not disclosed or suggested in the patent in suit.

Inherent longitudinal (up-and-down) stability may be built into an airplane by the *fixed* horizontal tail surface or "stabilizer" at the rear (R. 15, bottom; 16, top). (See also drawings of petitioner's machines, Plaintiff's Exhibits 3–5, which are incorporated in the findings by reference; Binder, pp. 13–17.) This, also, has been well known in the art for years, but is not employed in any of the three embodiments of the patent in suit, or in any way suggested by it.[28]

Two other important *fixed* and inherently stabilizing elements of construction, which are shown in the drawings of the accused machines, made a part of the findings of the court below (Finding XXI, R. 23; Binder, pp. 13–17), are:

The *fixed* vertical fin at the rear of the plane, in front of the directional rudder, and above the line of thrust of the propeller. In the same manner as the fixed horizontal fin (R. 15), it is apparent that this gives both directional and lateral stability,

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[28] The lower court, in its opinion, referred to certain testimony to the effect that one of the three accused constructions (the Curtiss JN–4) "longitudinally bordered on instability" (R. 73). But there is no *finding* to that effect, and only a small part of the testimony is stated in the opinion. The lower court's *finding* on the subject is as we have stated it, that—

> * * * by providing a horizontal vane or tail surface a longitudinal stabilizing tendency is imparted to the plane (R. 15, bottom).

The accused Curtiss plane in fact has such a horizontal tail surface (Binder, p. 13). It is nowhere suggested that the Curtiss plane even bordered on instability in any *other* direction or that either of the *other* two accused planes was unstable in *any* direction.

exerting a self-righting action and maintaining the direction of the plane as well;

The "sweep-back" of the wings when viewed from above, which produces directional stability of the plane.

These two additional inherent or constructional stabilizing features are also old (cf. Penaud & Gauchot patent), but, like the dihedral angle and horizontal fin, both are conspicuously absent from all the embodiments of the patent in suit. Esnault-Pelteries's invention not only did not include them, but, as we shall show, is based upon their absence. Figure 2 of the patent (Binder, p. 5) affirmatively shows that no dihedral angle is present; figures 3, 3a, 8, 8a, 9, 9a, and 11 (Binder, pp. 5–11), all show that there is no sweep-back; and almost all the figures show that there are no *fixed* tail surfaces, either vertical or horizontal. It is not a case of inferring a negative from complete absence of disclosure; these figures *affirmatively* show that the well-known and inherent structural features for giving automatic stability are *not* employed in the patent.

In short, the patent in suit, in all its modifications and embodiments, shows an inherently *unstable* plane, in which stability and equilibrium must be *"maintained"* or *"produced"* (as the claims in suit all particularly specify) by movement of the controls. The court in the Eastern District of New York aptly summarized the matter:

> The patent in suit is directed to the production of stability *by hand instead of automatically,* and that produced by the pilot with the joy stick is the only stability produced by the patent. (Italics supplied.) (56 F. (2d) at p. 407, top of 1st column.)

And again (56 F. (2d) at p. 403, near bottom of second column):

> The patent in suit is of the *non*-stable type, and depends for equilibrium *solely* upon the manipulation of the control levers.

The same conclusion was reached by the Circuit Court of Appeals (66 F. (2d) at p. 479, bottom of 1st col. and top of second col.).

Contrasted with this, all of the accused constructions have *built-in and inherent automatic stability,* not under the control of the pilot at all.

The lower court took the Curtiss "JN–4D" as typical of the alleged infringing planes (R. 71), and we shall accordingly refer principally to it. Its control system is shown in plaintiff's exhibit 2. (Binder, p. 13.) The drawing is incorporated by reference in the findings of the court below (R. 23), and shows the structural features producing inherent stability, as well as the "controls" which may be used for overcoming the automatic stability to execute some maneuver or to hasten the automatic action if desired (R. 16). These controls are used by the pilot "sometimes to assist and at other times to oppose" (R. 16) the inherent stability of the plane.

The control surfaces which are subject to the control or operation of the pilot do *not* include any of the structural elements for "producing" or "maintaining" stability. Those are all *fixed* in the construction of the plane, and can *not* be varied by the pilot at all. He can operate the vertical and horizontal rudders, to perform evolutions, whether to assist or oppose the automatic action of the plane. The rudders normally trail straight out behind the fixed vertical and horizontal tail surfaces, and the ailerons normally trail straight out behind the tips of the wings. The vertical rudder is operated by a "rudder bar" in front of the pilot's seat, and worked by his feet. Its operation and connection is what the plaintiff would call "*contra*-instinctive" because when the pilot pushes forward with his right foot, the plane turns to the right, which is *opposite* to the direction of the pilot's movement. (R. 23.)

The horizontal rudder and ailerons are controlled by a vertical handle so connected that forward or backward motion makes the plane go down or up, respectively, and sidewise motion makes the plane bank in the corresponding direction (R. 23).

What the Circuit Court of Appeals said about the "Corsair" in the *Chance Vought* case, is equally apt here, to summarize the evidence:

> The controls are usually operated [by the pilot] when it is desired to *overcome* the automatic stability of the plane, in order to execute some movement such as taking off,

> landing, or making a bank. (66 F. (2d) at p. 479, 1st column.)

That is similar to the finding of the court below, here, that the controls are operated "sometimes to assist and at other times to oppose" the inherent stability of the plane (R. 16).

In the accused planes there is no connection between the operation of the vertical and horizontal rudders. They are entirely independent and are independently connected and operated by entirely different controls. The vertical rudder is operated by the pilot's feet and the horizontal rudder by his hands. There is no interconnection or inter-relation, and nowhere is there any finding that there is any inter-relation or "cross-response", except of a minor character, between the vertical and horizontal rudders or controls in any of the accused airplanes.

This is all in striking contrast with the patent in suit. In all three of *its* embodiments, the vertical and horizontal steering surfaces are integral and necessarily move together, as a unit. In two of the three embodiments ("bird tail" and "tandem-wing" monoplane; Binder pp. 7, 8) there is *no* vertical rudder at all; both horizontal and vertical steering are accomplished by movement of one and the same horizontal surface—the horizontal tail of the "bird tail" and the rear wing of the "tandem-wing" monoplane. "This is the way the birds and particularly the seagulls use their tails

when they desire to turn" (patent in suit, p. 3, lines 49–51; Binder, p. 3). In the other embodiment of the patent in suit ("ring tail"; Binder, p. 12), there are vertical and horizontal surfaces, but they are all integrally mounted on the eccentrically hung "ring", so that any movement imparted to the ring, for the purpose of utilizing the function of the one, necessarily changes the position and "attitude" of the other. Figures 4, 5, and 19 of the patent (Binder, pp. 5, 12) show the eccentric hanging of the ring itself, and figures 5 and 6 (Binder, pp. 5, 7) show, in addition, the eccentric connection of the control rod, at the point marked 70.

Thus (see figures 6 and 10; Binder, p. 7), the only steering and pitching controls shown in the patent (handles 61 and 68, Fig. 6, and handles 86 and 80, Fig. 10) not only actuate the same integral control surfaces, but are both interdependently connected thereto; while in the "tandem wing" the control of the rear wing is by the "interdependent horizontal sticks" of the respondent's 1906 French patent. As the Circuit Court of Appeals tersely stated the matter:

> Of the three embodiments of the invention disclosed in the patent, the ring tail steers left or right by forward or backward motion of the steering lever; the bird tail steers left or right sometimes in response to the corresponding and sometimes in response to the opposite motion of the steering

> lever, depending upon the position of the joy-stick; and the tandem wing is controlled for pitch, roll, and steering by the two interdependent horizontal sticks constituting the "inherently defective" system of the 1906 French patent. (66 F. (2d) at p. 477, 1st col.)

We think the findings fully establish, therefore, that the petitioner's accused constructions are not only fundamentally different from, but substantially the opposite of, the disclosure of the patent in suit, as regards stability, equilibrium, and control. The point was summarized by the Circuit Court of Appeals, and we think the findings here establish the same facts:

> The patent has levers to produce stability; appellee has handles to produce instability by destabilizing the machine for an evolution. The patent has hand-produced stability or equilibrium, laterally, longitudinally, and directionally; appellee has automatic stability, laterally, longitudinally, and directionally. The patent has continuous hand lever manipulation for producing stability at all times; appellee has automatic stability at all times, occasionally using the controls for accentuating the automatic stability characteristics. (66 F. (2d) 479, second col.)

There is lacking, therefore, the essential identity of means, operation, and result, all of which must

concur to establish infringement, entirely irrespective of the language of the claims:

> The patentee may bring the defendant within the letter of his claims, but if the latter has so far changed the principle of the device that the claims of the patent, literally construed, have ceased to represent his actual invention, he is as little subject to be adjudged an infringer as one who has violated the letter of a statute has to be convicted, when he has done nothing in conflict with its spirit and intent. "An infringement", says Mr. Justice Grier, in *Burr* v. *Duryee,* v *Wall.* 531, 572 [17: 650, 658], "involves substantial identity, whether that identity be described by the terms, 'same principle', same '*modus operandi*', or any other * * *". (*Westinghouse* v. *Boyden,* 170 U. S. 537 at p. 568.)[29]

Of the three accused constructions, two are *biplanes.* The patent in suit states at the outset that it has for its object "a *monoplan aeroplane",* with one or several pairs of wings which may be directed or distorted as desired (*supra,* p. 50)). All three of the alternative "embodiments" of the patent are monoplanes, and, until just before grant of

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[29] See also *Holland Furniture Co.* v. *Perkins Glue Co.,* 277 U. S. 245, at p. 257, middle; *Cimiotti* v. *American Fur Refining Co.,* 198 U. S. 399 at p. 414; *Kokomo Fence Machine Co.* v. *Kitselman,* 189 U. S. 8 at p. 24. Compare also with reference to the analogy to violation of the letter of a statute without contravention of its spirit: *United States* v. *Kirby,* 7 Wall. 482 at pp. 486, bottom, 487.

the patent, the application was entitled, from the beginning, "System of *Monoplan* Aeroplane" (*supra,* p. 50). The grant of the patent in suit over the prior Wright patent was secured only by the respondent's representation to the Patent Office that there was an important distinction "between applicant's *monoplane* and the Wright *biplane.*" (Italics added.) (Binder, p. 79.) The Navy "Corsair", which the Circuit Court of Appeals considered and held not to infringe, was a *biplane,* and the court emphasized that distinction from the *monoplane* of the patent (66 F. (2d) at p. 479, middle of 1st column).

So, at least two of the three accused constructions are outside the patent in suit, in any event, on the fundamental representation which the patentee made to the Patent Office, concerning the scope of his invention and its alleged distinction from the prior art, in order to induce the grant of the patent, and on the basis of which the Patent Office finally made the grant.

The fact is, however, that even in language, the claims in suit are expressly limited so as to *exclude* all of the petitioner's accused constructions.

The claims in suit are numbers 2 and 5 to 9, inclusive. They do not find even verbal response in any of the alleged infringing machines; much less are they satisfied in substance:

Claim 2 calls for an aeroplane having "distortable wings", not used by the petitioner, for peti-

tioner has ailerons (as in the prior art) for executing maneuvers, instead of distortable wings (like the respondent's disclosure and the Wright plane). The claim specifies, next, that the distortable wings are "for *maintaining* transverse stability", and requires a (horizontal) rudder "for *maintaining* longitudinal stability." Neither requirement is found in the petitioner's machines, since, in them, both transverse and longitudinal stability are *inherent*. They do not require to be "*maintained*" by distortion of the wings or by operation of a horizontal rudder. The claim also requires a lever for "*controlling*" the (distortable) wings and the (horizontal) rudder. Petitioner's wings are rigid, and the ailerons and rudder are always in a normal position if the controls are not used. And finally, the claim requires a steering rudder and "a *separate* lever" for controlling the steering (vertical) rudder. If the claim is applicable to petitioner's vertical lever (which operates the ailerons and elevator), and cross-wise foot bar (which operates the vertical rudder), it is not supported by the disclosure of the patent, for in the patent the two levers 61, 68 (Fig. 6; Binder, p. 7), 86, 80 (Fig. 10; Binder, p. 7), are not "*separate.*" Not only are they mechanically inter-connected; they interact *operatively* so that pitch and steering can not be "separately" controlled.

Claims 5 to 9, inclusive, each specify the combination of "means for *producing* lateral stability", "means for *producing* longitudinal stability" (sig-

nifying the distortable wings and movable tail) and "a single vertical lever", "movable" (claims 5–8) or "oscillatable" (claim 9), "in every direction", "for *operating* both said means."

On their face, therefore, those claims find no response in the petitioner's machines, because in all of the petitioner's machines both the "means for *producing* lateral stability" and "means for *producing* longitudinal stability" are built into the planes and are incapable of operation by "a single vertical lever" or in any other way. They are not under the control of the pilot at all, hence incapable of *any* "operation." The means for "*producing*" lateral and longitudinal stability—the dihedral angle, the horizontal fin at the tail, the sweepback, and the vertical fin—are permanently fixed and cannot be operated by any "means."

Hence even the language of the claims in suit expressly excludes the petitioner's airplanes. If the terms of the claims be properly related to the disclosure of the patent, they are in contrast to petitioner's constructions. Petitioner has no means for "maintaining" or "producing" stability capable of operation by "a single vertical lever" or otherwise.

But whatever the language in which the claims are expressed, they can not, in any event, be broader than the invention, and hence are not infringed. If they apply to the machines shown in the patent (all three of which are unstable),

wherein stability has to be "maintained" or "produced" by lever-movements, petitioner's machines do not infringe because they are not of that sort.

The claims of the patent in suit can not, in any event, if valid at all, be construed to cover the petitioner's machines. The latter follow and utilize the features of the prior art and are justified thereby; hence the claims of the patent, if valid, can not reach the petitioner.

The Penaud and Gauchot French patent, long prior to the respondent, showed and described all the structural elements utilized in the petitioner's machines for giving inherent, automatic stability, the dihedral angle, fixed vertical and horizontal fins at the tail, and sweep-back. Sheet 3 of the Penaud and Gauchot patent (Binder, p. 166) shows the dihedral angle; sheet 2 (Binder, p. 165) the sweep-back and the fixed horizontal fin at the rear (cross-hatched); and sheet 1 (Binder, p. 164) shows both the vertical and horizontal fixed fins at the rear. Thus, all of petitioner's automatically stabilizing elements are present, in the same combination, in this early French patent, long antedating the respondent.

The movable control surfaces utilized by petitioner for executing maneuvers are all also old in the prior art. The same Penaud and Gauchot patent has independent vertical and horizontal rudders associated with the respective fixed fins. The vertical rudder is GV (sheet 1, Binder, p. 164), and the two movable horizontal rudders are GH, GH

(sheet 2, Binder, p. 165). Like the petitioner's, they are entirely independent and may be operated separately, although in Penaud and Gauchot the two rudders are actuated by different motions of a single vertical control lever. The same patent also describes ailerons, without showing them in the drawings. They are, however, both shown and described in Laroze. The latter has, also, a movable vertical rudder for steering. The Wrights also had it, as well as a movable horizontal rudder or "elevator" for up and down steering, and also wing warping—the equivalent of ailerons. Hence all of petitioner's movable control surfaces were old, long before respondent, in the same combination, for producing the same results.

That leaves to the respondent only the use of a single vertical handle for operating two of the three well-known movable control surfaces. But this the patent in suit shows and describes for *"maintaining"* or *"producing"* stability. Petitioner has a vertical lever for operating two of its controls, but not to "produce" or "maintain" stability—for stability is inherent in petitioner's machines. Petitioner's lever is for use by the pilot to execute maneuvers when desired, and, in doing so he may either *assist* or *oppose* the inherent stability of the machines, as the court below found (R. 16, end of Finding XI). And, in any event, such vertical control levers or handles for operating the movable control surfaces of airplanes are also old, as in Laroze, Penaud and Gauchot, Bleriot, and the

other prior art already described (*supra*, pp. 26–33). Nor is it any more than a vertical mounting of the horizontal handle, also old, for the same purpose, and dedicated to the public in this country by respondent's failure to apply, within a year, for a United States patent corresponding to his first French patent. Even petitioner's control handle is, therefore, likewise old in the prior art, and petitioner utilizes nothing which is new in the patent in suit.

Thus, petitioner is shown to follow the prior art and to be wholly justified thereby. Its machines utilize no novel feature or element of the patent in suit:

> Assuming the validity of the patent in suit, it must be limited to the structure disclosed employing the *bird tail* or *ring tail* unit for control about the longitudinal and vertical axes with a restricted range of equivalents. (*Pelterie* v. *Chance Vought*, 66 F. (2d) at p. 478, second column.)

Petitioner does not utilize either the bird tail or the ring tail of the patent in suit, nor any equivalent thereof, and hence does not infringe. If valid, the claims of the patent in suit can not cover the petitioner, because the petitioner's structure is like the prior art.

In concluding this part of the discussion, it seems important to call attention to the fact that the Circuit Court of Appeals held that modern airplanes do not infringe the respondent's patent. The

three airplanes to which the findings of the court below in this case are directed are not as modern as those involved in the case decided by the Circuit Court of Appeals. They were wartime airplanes and represented a transition stage in aircraft construction. Consequently, under no circumstances, should the petitioner be precluded from showing that the modern airplanes which it has purchased and used subsequently to the war do not come within the scope of the patent. This, of course, is a matter that may be left to the accounting proceeding with suitable directions from this Court, should the case reach that stage. We contend, however, as heretofore shown, that the patent is invalid, so that the question as to what, if any, airplane infringed becomes immaterial.

CONCLUSION

The judgment of the Court of Claims should be reversed and the petition dismissed.

Respectfully submitted.

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APPENDIX

R. S., Section 4886 (U. S. C., Title 35, Sec. 31):

> Any person who has invented or discovered any new and useful art, machine, manufacture, or composition of matter, or any new and useful improvements thereof, or who has invented or discovered and asexually reproduced any distinct and new variety of plant, other than a tuber-propagated plant, not known or used by others in this country, before his invention or discovery thereof, and not patented or described in any printed publication in this or any foreign country, before his invention or discovery thereof, or more than two years prior to his application, and not in public use or on sale in this country for more than two years prior to his application, unless the same is proved to have been abandoned, may, upon payment of the fees required by law and other due proceeding had, obtain a patent therefor.

R. S., Section 4887 (U. S. C., Title 35, Sec. 32):

> No person otherwise entitled thereto shall be debarred from receiving a patent for his invention or discovery, nor shall any patent be declared invalid by reason of its having been first patented or caused to be patented by the inventor or his legal representatives or assigns in a foreign country, unless the application for said foreign patent was filed more than twelve months, in cases within the provisions of section 31 of this title, and four months in cases of designs, prior to the

filing of the application in this country, in which case no patent shall be granted in this country.

An application for patent for an invention or discovery or for a design filed in this country by any person who has previously regularly filed an application for a patent for the same invention, discovery, or design in a foreign country which, by treaty, convention, or law, affords similar privileges to citizens of the United States shall have the same force and effect as the same application would have if filed in this country on the date on which the application for patent for the same invention, discovery, or design was first filed in such foreign country, provided the application in this country is filed within twelve months in cases within the provisions of section 31 of this title, and within four months in cases of designs, from the earliest date on which any such foreign application was filed. But no patent shall be granted on an application for patent for an invention or discovery or a design which had been patented or described in a printed publication in this or any foreign country more than two years before the date of the actual filing of the application in this country, or which had been in public use or on sale in this country for more than two years prior to such filing.

R. S., Section 4923 (U. S. C., Title 35, Sec. 72):

Whenever it appears that a patentee, at the time of making his application for the patent, believed himself to be the original and first inventor or discoverer of the thing patented, the same shall not be held to be void on account of the invention or discov-

ery, or any part thereof, having been known or used in a foreign country, before his invention or discovery thereof, if it had not been patented or described in a printed publication.

Act of June 25, 1910, as amended by Act of July 1, 1918 (U. S. C., Title 35, Sec. 68):

Whenever an invention described in and covered by a patent of the United States shall be used or manufactured by or for the United States without license of the owner thereof or lawful right to use or manufacture the same, such owner's remedy shall be by suit against the United States in the Court of Claims for the recovery of his reasonable and entire compensation for such use and manufacture. The Court of Claims shall not entertain a suit or award compensation under the provisions of this section where the claim for compensation is based on the use or manufacture by or for the United States of any article owned, leased, used by, or in the possession of the United States prior to June 25, 1910. In any such suit the United States may avail itself of any and all defenses, general or special, that might be pleaded by a defendant in an action for infringement, as set forth in this chapter, or otherwise. The benefits of the provisions of this section shall not inure to any patentee who, when he makes such claim, is in the employment or service of the Government of the United States, or the assignee of any such patentee. This section shall not apply to any device discovered or invented by such employee during the time of his employment or service.

Judicial Code, Section 155 (U. S. C., Title 28, Sec. 261):

> Aliens who are citizens or subjects of any Government which accords to citizens of the United States the right to prosecute claims against such Government in its courts, shall have the privilege of prosecuting claims against the United States in the Court of Claims, whereof such court, by reason of their subject matter and character, might take jurisdiction.

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